VOLUME 13 NUMBER 2

MAR-APR 1956

The BULLETIN

American Society of Hospital Pharmacists

EDITOR
Don E. Francke
University Hospital
University of Michigan
Ann Arbor, Michigan

ASSOCIATE EDITOR
Gloria Niemeyer
American Pharmaceutical Association
2215 Constitution, N.W.
Washington 7, D.C.

CONTRIBUTING EDITORS
Joanne Branson
Bernard E. Conley
Leo F. Godley
William Johnson
Clifton Latiolais
Paul Parker
Sister Mary Etheldreda
Eddie Wolfe

ART EDITOR
Richard A. Huff

CIRCULATION
Virginia Dean

MEMBERSHIP in the American Society of Hospital Pharmacists and the American Pharmaceutical Association is open to all practicing Hospital Pharmacists. With membership is included subscriptions to THE BULLETIN of the American Society of Hospital Pharmacists and to the two *Journals* of the American Pharmaceutical Association, as well as the several services of both organizations.

ADVERTISING will be accepted, subject to editorial approval, for prescription products as well as for other items used extensively in hospitals. Inquiries should be sent to the Associate Editor of THE BULLETIN, American Pharmaceutical Association, 2215 Constitution Ave., N.W., Washington 7, D.C.

SUBSCRIPTION RATE: In the U.S. $4.50 per year (six issues), single copies 75 cents; Foreign $5 per year, single copies 85 cents. CHANGES OF ADDRESS should be directed to the Division of Hospital Pharmacy, American Pharmaceutical Association, 2215 Constitution Ave. N.W. Washington 7, D.C.

Copyright 1956
by the American Society of Hospital Pharmacists

The American Society of Hospital Pharmacists, an affiliate of the American Pharmaceutical Association, is a national organization devoted to the profession of hospital pharmacy and dedicated to the improvement of pharmaceutical service in the interest of better patient care in hospitals.

IN THIS ISSUE

Preparation of Small Volume Injections 109
John A. Scigliano

Storage Requirements for Drugs 115
Amalia Heaton Sargent

The Utilization of Pharmacists in the Smaller Hospitals 120
R. C. Williams

The Role of the Pharmacist in a Rural Medical Center 123
Marjorie O'Boyle

Development of a Prophylactic Baby Ointment 128
Sister Cecilia Marie, S.S.M. and C. Lee Huyck

Tribromoethanol Suppositories 130
Louis D. Hauser and W. Howard Hassler

1956 Institutes 133
Eighth Annual Texas Seminar 136
Jean Watson Sheffield

Internships and Graduate Study Programs in Hospital Pharmacy 137

Impressions . . . an American Pharmacist in Europe 146

ASHP Affiliates 147
As the President Sees It 150
Current Literature 143
Book Reviews 144
Editorial 107
Letters 105
New Members 158
News Items 151
Positions
Therapeutic Trends 139
Timely Drugs 141

THE BULLETIN is published bimonthly at Hamilton, Illinois, by the American Society of Hospital Pharmacists in cooperation with the Division of Hospital Pharmacy of the American Pharmaceutical Association. Editorial office at 1313 East Ann Street Ann Arbor, Michigan. Entered as second class matter July 19, 1951 at the post office at Hamilton, Illinois. CONTRIBUTIONS will be accepted if they are of general interest to those in hospital pharmacy. The editors reserve the right to revise all material submitted, if necessary. The American Society of Hospital Pharmacists and the American Pharmaceutical Association assume no responsibility for the statements and opinions advanced by contributions to THE BULLETIN. Views expressed in the editorials are those of the editor and do not necessarily represent the official position of either the American Society of Hospital Pharmacists or the American Pharmaceutical Association.

SYNKAYVITE

In hospitals throughout the country, orders for routine administration of vitamin K often specify Synkayvite 'Roche.' Water-soluble, highly potent and economical, Synkayvite is suitable for subcutaneous, intramuscular, intravenous and oral therapy. Synkayvite will not gather dust on your pharmacy shelves.

SYNKAYVITE®

Synkayvite Sodium Diphosphate – brand sodium menadiol diphosphate

ORDER DIRECT FROM 'ROCHE' AT HOSPITAL PRICES.

HOFFMANN - LA ROCHE INC.
Roche Park • Nutley 10 • New Jersey

LETTERS

Comments on The Bulletin

DEAR SIRS: I was very interested in your editorial in the November-December issue of THE BULLETIN. I have never met Dr. Heller. However, from his background as given elsewhere in THE BULLETIN, it would seem that he should make an excellent head for the SOCIETY's new Committee on Pharmacy and Pharmaceuticals.

Having read your editorial, I cannot help expressing a thought which has now come to me many times. It is that THE BULLETIN has exceedingly great value for all interested in hospital pharmacy as a medium of communication regarding the activities of the ASHP and other developments in the field. In my own mind, this function of THE BULLETIN is differentiated from it function in carrying articles of scientific interest. I do not minimize the value of the latter to the practicing pharmacist, but to me the former function is one of great helpfulness. I am sure that THE BULLETIN is making a very great contribution to the development of the SOCIETY.

PARKE RICHARDS, JR., *Manager*
Hospital Department
Hoffmann-La Roche Inc.
Nutley 10, N. J.

DEAR SIRS: Let me take this opportunity to let you know how helpful THE BULLETIN has been in my work. Your splendid articles are of exceptional quality. Here, during the busy pharmacy hours we have little time to read about every new pharmaceutical that is being manufactured today. We therefore take pride in reading your concise articles about drugs and manage to keep abreast so that we can be a credit to our profession, and consultants to the medical profession. Keep up the splendid work.

EUGENE MILLER, *Pharmacist*
Jewish Hospital
Louisville, Ky.

Request for Reprints

DEAR SIRS: Please send me one copy of the article entitled "The Departments of Pharmacy and Central Supply—Mercy Hospital, Toledo, Ohio," by Sister Mary John. This appeared in the January-February (1946) issue of THE BULLETIN.

Thank you for your kind consideration in this matter.

E. S. TODD, *Administrative Assistant*
Little Company of Mary Hospital
Evergreen Park 42, Ill.

Appreciates Assistance

DEAR SIRS: May we cancel our request for your assistance in employing a pharmacist. We have employed a friend of one of our other pharmacists. You did, however, refer several fine applicants to us which we greatly appreciate.

HARRY J. WERNECKE, JR., *Personnel Director*
Rochester Methodist Hospital
Rochester, Minnesota

From a Member

DEAR SIRS: My dues in the American Pharmaceutical Association as well as the ASHP, the Southeastern Society, and the North Carolina Society, have been paid today. Membership in the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS has been very helpful to me in my first years as a hospital pharmacist. It is a privilege to be a member of this group.

JEANETTE HUNTER, *Pharmacist*
City Memorial Hospital
Winston-Salem, N. C.

No Longer in Hospital Pharmacy

DEAR SIRS: Please remove my name from your membership list as I am no longer connected with a hospital pharmacy. I have always been proud to be a member of your organization, and whenever the opportunity presents itself, I shall always encourage membership.

KENNETH H. SCHAEFER, *Pharmacist*
Affton 23, Mo.

Request from Australia

DEAR SIRS: We are interested in an article on "Cartridge Therapy," by Mr. Charles F. Schraub which appeared on page 14 of the March-April (1955) issue of THE BULLETIN OF THE AMERICAN SOCIETY OF HOSPITAL PHARMACISTS. It would be appreciated if you could mail to us as soon as possible up to five copies of this number.

F. A. OSBORNE, *Australian Sales Manager*
Boots Wholesale Chemists and Druggists
Sydney, Australia

increasingly on call

for hypnosis

and sedation

CARBRITAL®

In the hospital, CARBRITAL continues to demonstrate its particular advantages in combating the ever-present problem of insomnia. It provides two stage hypnotic-sedative effect of short-acting pentobarbital sodium and milder, longer-lasting carbromal. Restless patients are helped to fall asleep promptly and to stay asleep throughout the night, without likelihood of morning "hangover."

CARBRITAL is well adapted to preoperative and to postoperative uses, and is especially valuable in obstetrical care and during blood transfusions, special examinations, and other procedures, in which its hypnotic-sedative action helps to minimize initial pain and to allay subsequent discomfort.

packaging: CARBRITAL Kapseals®—pentobarbital sodium, 1½ gr., and carbromal, 4 gr. In bottles of 100 and 1,000. CARBRITAL Kapseals (Half-Strength)—pentobarbital sodium, ¾ gr., and carbromal, 2 gr. In bottles of 100 and 1,000. CARBRITAL Elixir—pentobarbital sodium, 2 gr. per fluidounce (¼ gr. per teaspoonful), carbromal, 6 gr. per fluidounce (¾ gr. per teaspoonful). In 16-ounce bottles.

dosage: Adults: 1 or more Kapseals as required; or 1 to 4 teaspoonfuls of the Elixir as required. *Children:* ½ to 1 teaspoonful according to age and condition.

PARKE, DAVIS & COMPANY • DETROIT, MICHIGAN

EDITORIAL

Relationship Between Pharmacy and Purchasing

by Don E. Francke

One of the principles expressed in the Minimum Standard for Pharmacies in Hospitals is that "The pharmacist in charge shall be responsible for specifications both as to quality and source for purchase of all drugs, chemicals, antibiotics, biologicals, and pharmaceutical preparations used in the treatment of patients." This important principle, approved by the American Hospital Association and others, applies even though a purchasing agent may do the actual procuring of supplies through a centralized department. In fact, MacEachern, in his book *Hospital Organization and Management,* states that "The purchase of drugs and pharmaceuticals is a specialty which can be carried out to best advantage by a pharmacist trained in managing a hospital pharmacy, and under control of the administrative office. This is the only department in the hospital in which it is usually not advisable to have purchasing done by a general purchasing agent."

In the application of this principle, the pharmacist is made, in effect, the agent of the medical staff and of the hospital for the specifications of medicinal agents. Justification for this lies in the fact that since the pharmacist has the responsibility for the compounding, dispensing, and manufacturing of drugs used in the hospital, he should also have the authority for the specifications of drugs to be purchased.

This responsibility should form the basis for relationships between the pharmacy and purchasing departments. A corollary of this responsibility is the right of the pharmacist to reject medicinal agents which do not meet the specifications he has prepared. With these principles in operation, relationships between the two departments should be harmonious. It is important that the policies be written and form a part of the hospital's operating policy. They may also be incorporated with the pharmacist's responsibilities in his job description.

Working within these principles, the purchasing department of the hospital has certain responsibilities for the procurement of medicinal supplies. These involve obtaining quotations from the sources specified, the use of competitive bidding, the maintenance of proper purchase records, issuance of the order, follow-up on delayed orders, and, in some cases, suggesting additional sources of supply to the pharmacist. In such a cooperative effort it is essential that the pharmacist and purchasing agent work hand in hand, each recognizing the prerogatives and the importance of the other.

It is the pharmacist's responsibility to prepare specifications for drugs in such a manner as to merit the continued confidence of the medical staff. He must select drugs manufactured by pharmaceutical firms that specialize in quality products. Nothing so quickly fosters dissatisfaction among the medical staff as attempts to supply pharmaceutical products obtained from nondescript sources at a low price. While the pharmacist is sometimes guilty of such a practice, it is more often a misguided administrator or an overzealous purchasing agent who unwittingly disrupts the smooth working relationship and understanding between the medical staff and the pharmacist by directing purchases to sources which are acceptable to neither. Should such a practice occur, the pharmacist should present the facts to the Pharmacy and Therapeutics Committee. The Committee should prepare a statement setting forth the accepted principles for the specification of medicinal agents and direct them to the proper hospital authorities. Usually, such a statement will bring about the desired results by clarifying the existing misunderstanding.

Understanding cooperation among the pharmacist, the purchasing agent, the medical staff, and administration is essential if the patient is to receive drugs of the highest quality from sources which are unquestioned.

preparation of small volume injections

by JOHN A. SCIGLIANO

THERE ARE MANY APPROACHES we might use to present the information relative to preparing small volume injections. We might discuss equipment from information available in text books or from the brochures of the manufacturer. Also, we might present the various official methods for sterilizing parenteral solutions with the aim of comparing the relative merits of each. Lastly, the data might be compiled from the actual use of equipment in conjunction with accepted technics. We have selected this latter method of presentation.

The equipment under consideration is generally available. The aspect of discussion will be to describe the equipment and indicate in what capacity it is being utilized in the Pharmacy of the Clinical Center at the National Institutes of Health. and to what degree it has satisfied the need for such equipment.

In most instances the injections prepared in our department are not of the routine, commercially-available compounds. The greater percentage of them are research materials, examples of which are, to name a few, as follows: triethylenethiophosphoramide, 1-dehydro-9-alpha-fluorohydrocortisone, 4-amino-N-methyl folic acid, versonol acid, amphenone B, and lysergic acid diethylamide, and etc. As may be noted from the above, many of these compounds have yet to be assigned other than the "jaw-breaking" chemical name. These drugs are supplied to investigators who have complied with the Food and Drug Administration regulation pertaining to the interstate shipment of drugs intended for "Investigational Use", i.e. the investigator shall sign a statement that "he has adequate facilities for the investigation" and "that such drugs will be used solely by me or under my direction".

Presented at the Annual Meeting of the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS, May 1, 2, and 3, 1955, Miami Beach, Florida.

JOHN A. SCIGLIANO is Assistant Chief, Pharmacy Department, Clinical Center, National Institutes of Health, Bethesda, Maryland, and Chairman, Minimum Standards Committee of the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS, 1954-55.

FIG. 1. *Sterile Transfer of Liquids with the Cornwall Pipette.*

At this point some may be entertaining the question, "How may a hospital pharmacist participate in the investigational drug program when it appears to be so restrictive"?

Opportunity For Research

Each individual pharmacist must await the opportunity to participate in this program, and he must satisfy the immediate problem as it occurs. At our institution the first opportunity which presented itself was the aseptic transfer of a sterile research solution from a large volume container to smaller units; the next was the preparation of a small volume injection of ingredients stable to heat, and the next was the preparation of a small volume solution of a heat labile compound, etc. The investigators having gained confidence in our ability as a result of these initial services, permitted us to participate more and more and with ever increasing difficult problems. They even permitted our holding the research compounds in our stocks, thus permitting ready availability of the drug for preparing the desired injection (or as in other instances, of other dosage forms) immediately upon receipt of the investigator's request.

Investigational drugs from the manufacturer must, by the F.D.A. regulations, be identified by the legend, "Caution: New Drug—Limited by Federal Law to Investigational Use". Although the law does not specify the labeling of investigational drugs not shipped in interstate commerce, the products prepared for use in our institution carry "Investigational Use Only" on their labels.

Further Problems

Having overcome the first problem in clinical investigation of new drugs, their procurement, we are confronted with a second. This deterent to completion of a requested project, is the meagre information available from normal reference channels of chemical and/or physical properties of new chemical compounds. Often solubility and stability must be determined in the laboratory or supplemented by library research of properties of related substances.

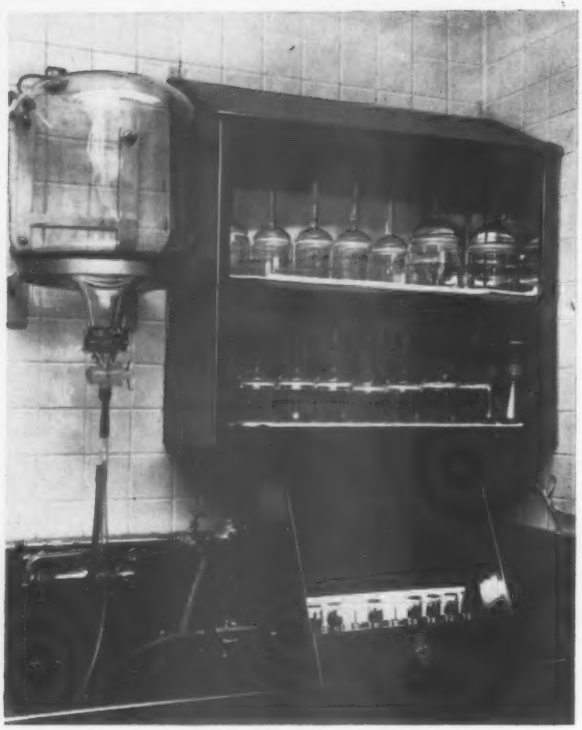


FIG. 2. *Vial Washer and Rinser.*

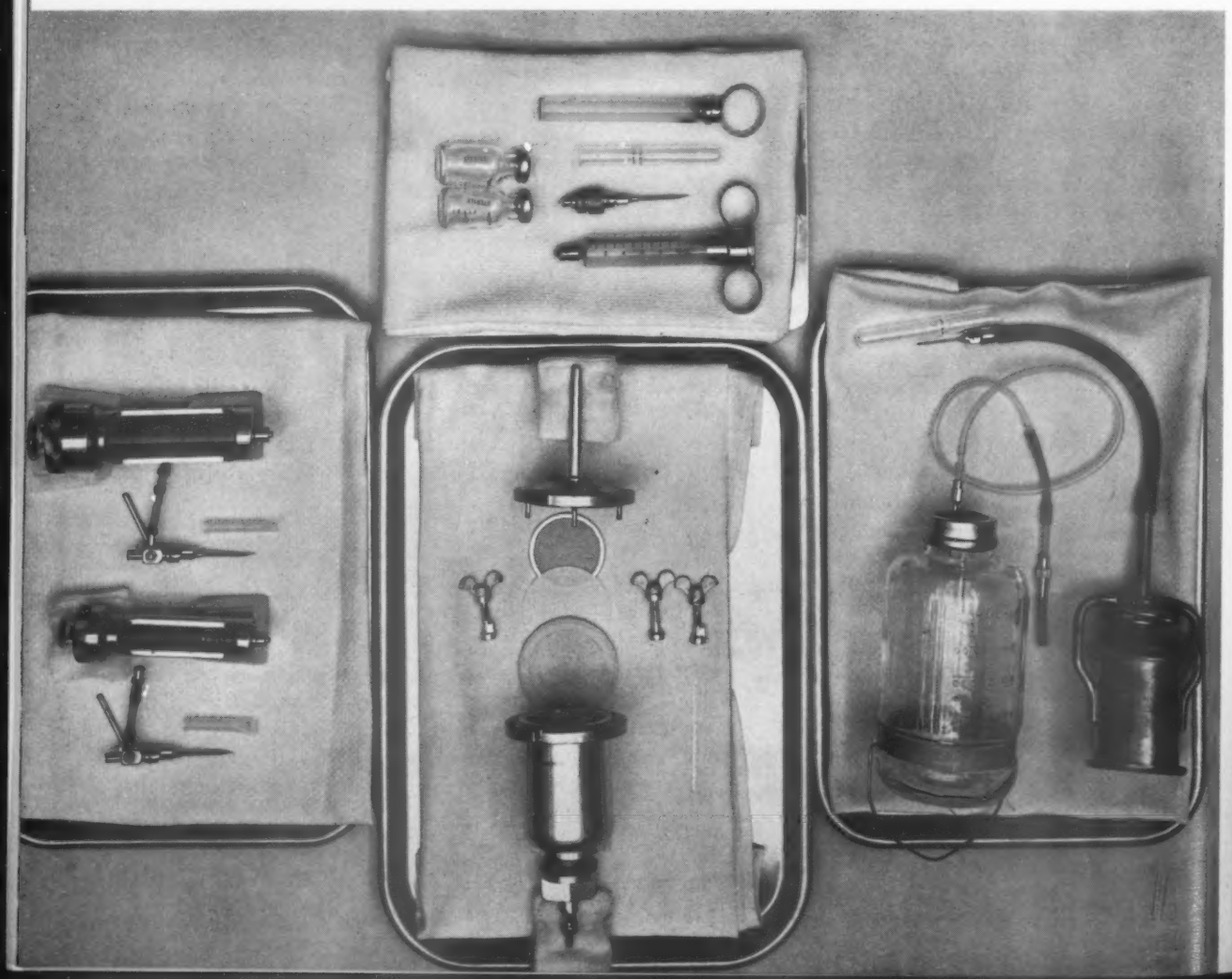
The foregoing discussion may cast some light on the reasoning behind the selection of equipment and technics for the preparation of injections in which the chemical and physical properties play no small role.

Vial Washer

In Fig. 2 is seen the apparatus used to clean the containers. This Vial Washer and Rinser is Skolaut's suggested modification of a Macalaster-Bicknell needle washer. It can prepare nine vials with 20 mm. openings of 10 ml. to 50 ml. capacities. A non-ionic detergent is recommended and is introduced into the system automatically diluted by a metering device at outlet of the detergent chamber.

A suggested procedure for preparing new glass vials is as follows: Wash the outside of the vials with detergent-hot tap water and rinse with distilled water. Position the vials over the jets. Turn switch to *wash* to introduce hot tap water-detergent solution into the vials under pressure. Wash for a half minute. Turn switch to *rinse* to introduce freshly distilled water from the reservoir bottle.

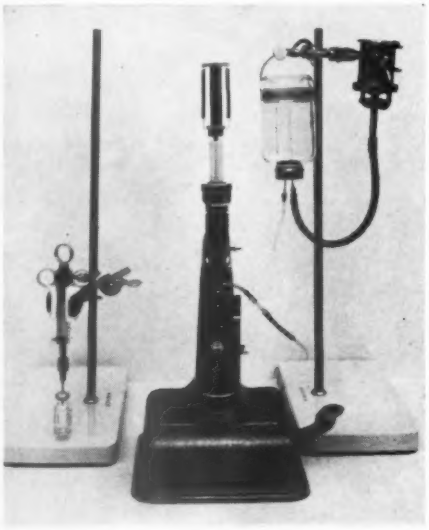
FIG. 3. *Trays of Filter Sterilizing Equipment.*



This procedure rinses both inside as well as the openings of the vials. Rinse for a half minute. Turn switch to *off*. Observe degree of cleanliness of vials by means of inspection plate arrangement. Permit vials to drain a few seconds.

Where it is necessary to steam sterilize sealed empty vials, it is advisable to allow a small fraction of a ml. of the water to remain in the vials. Where the presence of water in the vials may hemolyze the product, it is suggested that the vials be given a final rinse with isotonic sodium chloride solution or have the vials heat dried and sterilized before introducing the material in question.

FIG. 4. *Filter-Sterilizing and Packaging.*



Sterile Equipment

In Fig. 3 are seen trays of equipment ready to be sterilized. On the left is the vacuum Seitz-type filter; in the center is the pressure Seitz-type filter; on the right are Purdum-Gregorek Soluter syringe carriages and three-way valves; and in front and center is the Swinny Filter Adapter with syringe and sterile vials. After assembling to this point, the trays are covered with towel padding and wrapped with brown sterilizer paper and sterilized by steam in the autoclave (121°C., 20 lbs., 15 min.). The preparation of a sterile injection with this sterile equipment is then a matter of exercising aseptic technic.

Filter Sterilizing and Packaging Equipment

Filter sterilizing and packaging equipment are shown in Fig. 4. The Swinny filter is on the left and is shown attached to the syringe with air-vent needle puncturing the diaphragm of the sterile vial. In actual practice the syringe is held in the hand. The Purdum-Gregorek Soluter is on the right. The solution in the intravenous bottle has been sterilized and introduced through the filter by evacuating the bottle via the clear plastic tubing. This same tubing and adapter is next connected to the inlet of the 3-way valve. The syringe carrier system, pre-set for the desired volume, is thus connected to the bulk sterile solution, and the plunger is manipulated so as to introduce the liquid into the syringe. The platform on which a sterile capped vial rests is raised by means of the lever mechanism to effect the puncturing of the diaphragm by the needle. Return of the lever and re-

FIG. 5. *Equipment for Preparing Heat Stable Injections.*

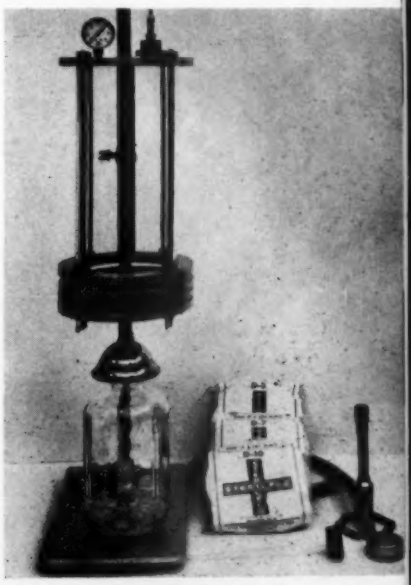


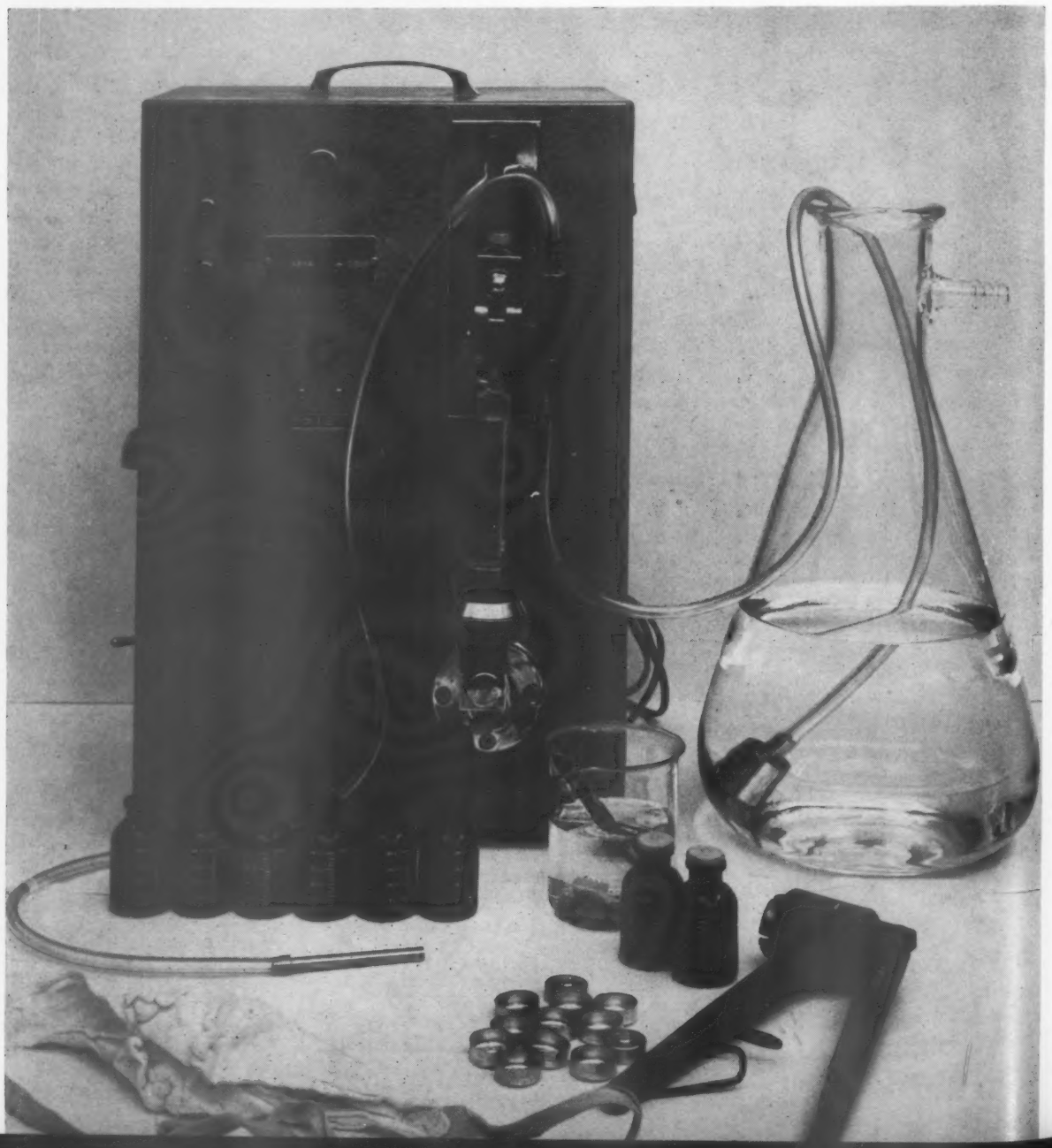
FIG. 6. *Horm Pressure Laboratory Filter.*

lease of the syringe plunger prepares for the filling of the next unit. The Swinny Filter Adapter is available from Becton-Dickinson. Seitz and Seitz-type filters may be obtained from any laboratory supply house. The Purdum-Gregorek Soluter is available from the Baltimore Biological Co., Inc.

Equipment For Heat-Stable Injections

To prepare heat-stable injections, the equipment shown in Fig. 5 is used. The ingredients are dissolved in freshly distilled water in the Pyrex bottle on the right. By means of clean air from the DeVilbiss Air Transformer on the wall, the solution is raised into the 1500 ml. fritted Pyrex filtering funnel. The solution is drawn through the filter by means of vacuum applied to the bottle below. The filtrate is then transferred from this bottle to the solution burette by applying vacuum to the filling head positioned on top of the burette. The filling of the bottles is effected by gravity. Because the resultant injections prepared with this equipment were consistantly pyrogen-free it was selected for preparing a 0.5 molar phosphates injection. From the very beginning it was discovered that a pyrogen-free injection of the phosphates could not be reproduced repeatedly. Contemporary with the study of this problem we received the Horm Pressure Laboratory Filter (see Fig. 6). Our selection of this piece of equipment was based on the premise that an injection solution could be filtered and packaged into containers in a single step. This set-up would also reduce the pieces of equipment required by that in Fig. 5.

Fig. 7. Filamatic Vial Filler with Glass Syringe



Horm Filter

The Horm filter has an outlet assembly with filling bell for sterile bottling. The visibility feature of design enables closing down of the process with a minimum loss of the unfiltered liquid, as well as preventing the possibility of "blow-through" from which results the introduction of fibers and the contamination of the filtrate. The unit consists of a Pyrex glass cylinder of 2800 ml. capacity. All metal parts coming in contact with the liquid are of stainless steel. It permits double or triple pass filtration in progressive stages. Though single pass filtration can be accomplished with this unit, its principal application is on liquids requiring multiple filtration. The liquid passes through a relatively course filter medium (Clariflow*) and continues through a denser, less porous medium (Steriflow*), in each successive stage. The process requires setting up the filter press with the grade of pads selected for the particular solution, using lint-free backing paper in conjunction with the pads. Tighten the press evenly; just tight enough to prevent the press from leaking. Then pass 6000 ml. of freshly distilled water through to rinse the pads. For sterilizing the equipment wrap in heavy brown autoclave paper and steam sterilize.

From the very beginning solutions of phosphates prepared with the Horm filter were pyrogen-free. Not only had the equipment preparation time been reduced to a minimum, but also we discovered that pyrogen-free injections could be reproduced and predicted. It has been suggested that the pyrogenic substances are adsorbed onto the pads and thereby eliminated from the injections.

The Horm Pressure Laboratory Filter is available from the F. R. Hormann Company, Inc., Newark, N. J.

Filamatic Vial Filler

In Fig. 7 there is displayed the Filamatic vial filler. This model has the glass syringe in place of the usual stainless steel unit. The transferring portion may be completely removed, prepared in a tray, wrapped, and sterilized. Reassembling, using aseptic technic, it may be used for transferring sterile solutions from bulk containers to smaller units. It may be used for nonsterile filling either as shown or by replacing the glass syringe with a stainless steel one, available in 120 ml. maximum capacity.

The Filamatic vial filler is available from the National Instrument Company of Baltimore, Maryland.

*Trademark of the F. R. Hormann Co., Newark, N. J.

FIG. 8. *Sterile Transfers of Liquids with the Aupette.*

PRECAUTIONS

1. Do not light ultraviolet lamp unless Plexiglas cover is in place.
2. Wear rubber gloves and keep wrists and entire arms well covered under hood.
3. Turn off ultraviolet lamp or cover front when hood is unattended.
4. Do not look directly at or even glance at ultraviolet lamp when operating.

Sterile Transfer Of Liquids

There are several transferring pipettes on the market. There are two with which we have had personal experience. The Aupette transfer pipette shown in Fig. 8 is the automatic pipette available from Labtician Products Company. It can be set to any predetermined volume within its scale, 5 ml. and 10 ml. sizes calibrated in 1/5 ml. units, and can be delivered repeatedly.

The Cornwall transfer pipette is another pipetting unit and is available from Becton, Dickinson Company. The unit consists of a syringe, double valve, 4" stainless cannula, 20" plastic tubing with metal sinker. The syringe has a Luer-Lok barrel. The 2 ml. syringe is graduated in 0.1 ml. units and has a fitted glass plunger with automatic spring return. A screw attachment with locknut sets the syringe for quick and automatic measuring of repeat doses. This instrument, in our experience, has proven to be more satisfactory. The setting is more positive and stable, the over-all handling of the syringe is more satisfactory and, not to treat economy too lightly, its cost is approximately ⅓ that of the Aupette unit.

Sterile Transfer Technic

In Fig. 8 the operator is transferring a sterile solution from the intravenous bottle hanging in the rear, left corner, into sterile vials. The work is performed over a sterile field and sterile rubber stoppers are inserted by means of the hand crimper in the foreground, extreme right.

The transfer hood shown in figure 8 may be easily built in a hospital pharmacy. The top and front are made of ¼" Plexiglas sheets. The inner area is covered with smooth black rubber matting to reduce undesirable ultraviolet reflection. The source of ultraviolet radiation is a Westinghouse unit and is attached at the top of the hood. A fluorescent light is directly behind the ultraviolet unit for additional light.

Ultraviolet Measurements

Prior to initiating the use of the hood, a series of measurements of ultraviolet emission were made at possible points of exposure and through a single and a double layer of the Plexiglas. This service was performed, at our request, by the Sanitary Engineering Branch of the National Institutes of Health with a G.E. Germicidal U.V. Intensity Meter. It was desired to determine whether the exposure to ultraviolet with this unit fell within the safe limits set by the A.M.A. Council on Physical Therapy.

The safe limits of exposure to germicidal ultraviolet (2537 Angstroms wave length) have been set at 0.1 microwatt per square centimeter $(uW/cm.)^2$ for continuous exposure and at 0.5 uW/cm^2 for an exposure period of seven hours in one day (*J. Am. Med. Assoc. 129*:1166, 1945).

The exposure report on the hood showed the intensity measured in areas where a worker's eyes might be exposed, varied from 0 to 0.5 $uW/cm.^2$ with the Plexiglas hood cover closed. With the cover open, the intensities varied from 10 to 100 $uW/cm.^2$ Tests made with thin rubber gloves indicated that one layer of rubber blocks all ultraviolet radiations. With cotton cloth, tests indicated that two layers of cotton cloth passed only a negligible amount of radiation.

From the above observations, the following precautionary measures were recommended:

1. Use ultraviolet lamp only when Plexiglas cover is between worker and source,
2. When hands and arms are placed inside hood, rubber gloves should be worn and entire arms should be covered by sleeves of a heavy laboratory coat or long sleeved shirt and a regular weight laboratory coat,
3. To avoid eye exposure to anyone looking into cabinet, the ultraviolet light should be turned off or the open front of the hood covered whenever the hood is unattended. Glasses safe to ultraviolet should be worn if the front of hood must remain open with ultraviolet light on,
4. A sign (see above) outlining the precautions should be placed on or near the hood.

Summary

In closing I would like to bring to your attention that all products prepared in our department are not released until they meet the standards for sterility and pyrogenicity. Also, those injections which are commercially available are not prepared. The requests for injectible research materials are so many in number and so varied in aspect, that facilities are better utilized for the preparation of the research material than for those commercially available. By preparing these special injections the clinical care of the patient is more completely served.

STORAGE REQUIREMENTS

FOR DRUGS

Temperature and other storage requirements for drugs in the U.S.P. XV, the N.F. X, and the N.N.R. 1955.

by AMALIA HEATON SARGENT

MANY DRUGS REQUIRE STORAGE temperatures to retain their potency or their physical and chemical stability. The pharmacist should adhere to storage temperatures recommended by the *United States Pharmacopeia,* the *National Formulary,* and *New and Nonofficial Remedies* to ensure dispensing products that have the activity or potency as labeled. In this way, he can maintain the confidence of the physician and patient in the products he dispenses. Also, in the case of flammable substances, proper storage becomes a safety factor.

The tables in this article are intended to serve as a reference for the pharmacist, nurse, and others who are concerned with proper storage of pharmaceuticals. The information contained here should serve as a helpful reference for the estimation of and planning for refrigerated storage areas and other special temperature requirements.

Inclusion of a basic drug in one of the lists for which specific temperature requirements are given does not indicate that all preparations of the drug require the same type of storage. For example, Dimercaprol U.S.P. should be stored in a cold place, *i.e.* not exceeding 15°C.; however, the U.S.P. lists no temperature requirement for the storage of Dimercaprol Injection.

The drugs covered are those currently official in the *United States Pharmacopeia* XV, the *National Formulary* X, and those listed in the 1955 edition of *New and Nonofficial Remedies.* There are, in addition, a large number of pharmaceuticals not recognized by these compendia which require refrigeration or other special storage conditions.

Also, certain classes of preparations, such as suppositories require storage under refrigeration as a general rule as do a number of antibiotic preparations.

This compilation does not designate those drugs affected by light.

Conflicting Storage Requirements

During the preparation of this article it was noted that the storage requirements recommended by pharmaceutical manufacturers sometimes differed from those of the *United States Pharmacopeia,* the *National Formulary,* or *New and Nonofficial Remedies.* In the majority of these instances the official compendia contain no statement on special temperature required for proper storage while the manufacturer recommends specific storage conditions. While no attempt has been made in this paper to gather a complete list of such variations in storage recommendations, a few examples are listed in Table IX.

AMALIA HEATON SARGENT received her Master of Science Degree at the University of Michigan and her Certificate of Internship at the University Hospital, Ann Arbor, Michigan. Mrs. Sargent is presently employed at the American Pharmaceutical Association, 2215 Constitution Ave., N.W., Washington, D.C.

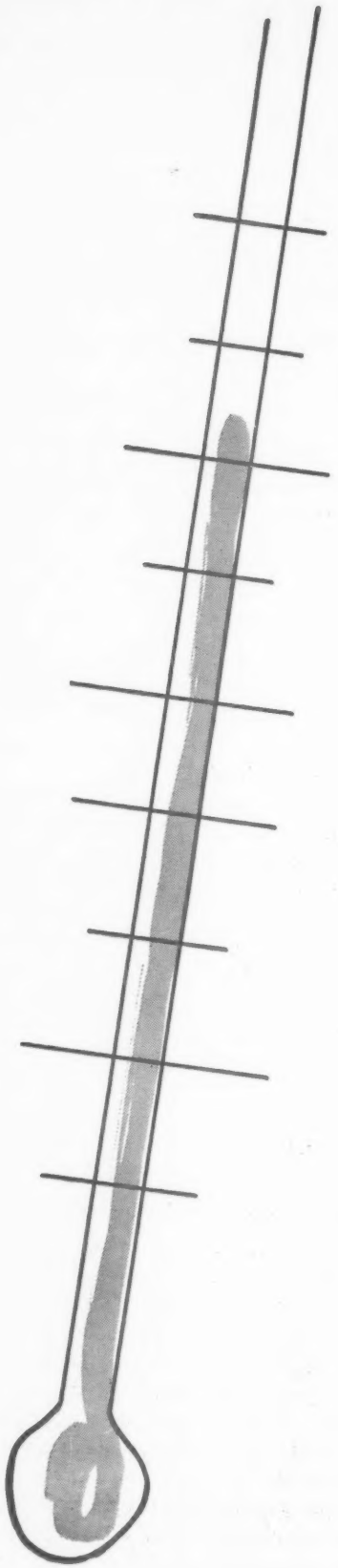


Table I. Drugs Which Should Be Stored at Temperatures Ranging from Below 0° C. to 12° C.

These drugs must be stored at temperatures in the range from below 0° C. to 12° C. They are all injectible dosage forms and include agents for cutaneous immunity tests, antitoxins, immune serums, toxins, toxoids, vaccines, and others.

The statement in U.S.P. XV and N.F. X on storage of biologicals is as follows: "Because biologics are usually stored in mechanically operated refrigerators, occasionally they are frozen. Provided the container remains intact, such freezing does not affect the potency of the product."

Preferably Below 0° C. Never Above 5° C.

Smallpox Vaccine U.S.P. XV, preferably below 0° C.
Yellow Fever Vaccine U.S.P. XV, never above 5° C.

2° to 5° C. Preferably At Lower Limit

Rabies Vaccine U.S.P. XV

2° to 10° C. Preferably At Lower Limit

Albumin, Normal Human Serum U.S.P. XV (Liquid)
Cholera Vaccine U.S.P. XV
Diphtheria Antitoxin U.S.P. XV
Diphtheria Toxin, Diagnostic U.S.P. XV
Diphtheria Toxin, Diagnostic, Inactivated U.S.P. XV
Diphtheria Toxoid U.S.P. XV
Diphtheria Toxoid, Alum Precipitated U.S.P. XV
Diphtheria Toxoid, Aluminum Hydroxide Adsorbed U.S.P. XV
Diphtheria Toxoid, Aluminum Phosphate Adsorbed N.N.R. 1955
Diphtheria Toxoid and Pertussis Vaccine Combined N.F. X
Diphtheria Toxoid and Pertussis Vaccine Combined, Alum Precipitated N.N.R. 1955
Diphtheria Toxoid and Pertussis Vaccine Combined, Aluminum Hydroxide Adsorbed N.N.R. 1955
Diphtheria and Tetanus Toxoids N.F. X
Diphtheria and Tetanus Toxoids, Alum Precipitated U.S.P. XV
Diphtheria and Tetanus Toxoids, Aluminum Hydroxide Adsorbed U.S.P. XV
Diphtheria and Tetanus Toxoids with Pertussis Vaccine Combined N.N.R. 1955
Diphtheria and Tetanus Toxoids and Pertussis Vaccine Combined, Alum Precipitated U.S.P. XV. Do not freeze.
Diphtheria and Tetanus Toxoids and Pertussis Vaccine Combined, Aluminum Hydroxide Adsorbed U.S.P. XV. Do not freeze.
Gas Gangrene Antitoxin, Bivalent N.F. X
Gas Gangrene Antitoxin, Pentavalent N.F. X
Gas Gangrene Antitoxin, Trivalent N.F. X
Globulin, Antihemophilic U.S.P. XV
Globulin, Immune Serum U.S.P. XV
Influenza Virus Vaccine, Polyvalent N.N.R. 1955. Do not freeze.

STORAGE TABLES

Pertussis Immune Human Serum U.S.P. XV
Pertussis Vaccine U.S.P. XV. Do not freeze.
Pertussis Vaccine, Alum Precipitated U.S.P. XV
Pertussis Vaccine, Aluminum Hydroxide Adsorbed N.N.R. 1955
Plague Vaccine U.S.P. XV
Streptokinase-Streptodornase N.N.R. 1955
Tetanus Antitoxin U.S.P. XV
Tetanus Toxoid U.S.P. XV
Tetanus Toxoid, Alum Precipitated U.S.P. XV
Tetanus Toxoid, Aluminum Hydroxide Adsorbed U.S.P. XV
Tetanus and Gas Gangrene Antitoxins N.F. X
Thrombin U.S.P. XV
Tuberculin, Old U.S.P. XV
Tuberculin, Purified Protein Derivative U.S.P. XV
Typhoid Vaccine U.S.P. XV
Typhoid and Paratyphoid Vaccine U.S.P. XV
Typhus Vaccine U.S.P. XV

Preferably Not Above 8° C.

Liver Fraction 1 N.F. X

4° to 10° C. Preferably Lower Limit

Blood, Citrated Whole Human U.S.P. XV

Above 0° C., Not Above 12° C.

Ergonovine Maleate Injection U.S.P. XV

Table II. Drugs Which Should Be Stored In A Cold Place

"A cold place is one having a temperature not exceeding 15° C. (59° F)", according to U.S.P. XV and N.F. X.

"A refrigerator is a cold place in which the temperature is held between 2° and 15° C. (36° and 59° F.)", as stated in U.S.P. XV and N.F. X.

Adrenal Cortex Extract N.N.R. 1955
Aminophylline Suppositories U.S.P. XV
Carbarsone Suppositories U.S.P. XV
Chloroazodin N.F. X
Dimercaprol U.S.P. XV
Ephedrine N.F. X
Ethyl Nitrite Spirit N.F. X
Insulin Injection U.S.P. XV. Do not freeze
Insulin, Globin Zinc, Injection U.S.P. XV. Do not freeze
Insulin Isophane Injection U.S.P. XV. Do not freeze
Insulin, Lente Zinc N.N.R. 1955. Do not freeze
Insulin, Protamine Zinc, Injection U.S.P. XV. Do not freeze
Insulin, Zinc Crystals N.N.R. 1955. Do not freeze
Magnesium Citrate Solution N.F. X
Oleovitamin A and D N.F. X
Oleovitamin A and D Capsules N.F. X
Orange Spirit, Compound U.S.P. XV
Orange Syrup U.S.P. XV
Oxidized Cellulose U.S.P. XV
Parathyroid Injection U.S.P. XV
Protamine Sulfate Injection N.F. X
Succinylcholine Chloride Injection U.S.P. XV
Sulfacetamide Sodium Solution U.S.P. XV
Vanilla U.S.P. XV

Table III. Drugs Which Should Be Stored In A Cool Place

The temperature range for a cool place is not designated in the U.S.P. or N.F. Presumably, a cool place has a temperature range of approximately 16° to 25° C.

In A Cool Place

Bacitracin U.S.P. XV
Bacitracin Ointment U.S.P. XV
Calciferol U.S.P. XV
Cinnamon N.F. X
Hyaluronidase for Injection U.S.P. XV
Isoflurophate U.S.P. XV
Liver Concentrate N.F. X
Mephenesin Capsules N.F. X
Phenylethyl Alcohol N.F. X
Phytonadione U.S.P. XV (Vitamin K_1, Mephyton). Do not freeze
Vitamin B_{12} with Intrinsic Factor Concentrate U.S.P XV
Vitamin B_{12} with Intrinsic Factor Concentrate Capsules U.S.P. XV
Vitamin B_{12} with Intrinsic Factor Concentrate Tablets U.S.P. XV

Not Exceeding 20° C.

Chorionic Gonadotropin N.N.R. 1955
Liver Extract U.S.P. XV
Liver Injection U.S.P. XV
Liver Injection, Crude U.S.P. XV
Liver Solution U.S.P. XV
Tryparsamide U.S.P. XV

Not Exceeding 25° C.

Ammonia Solution, Strong U.S.P. XV
Citric Acid Syrup U.S.P. XV
Dichlorophenarsine Hydrochloride N.F. X
Ether U.S.P. XV
Ethyl Oxide U.S.P. XV
Glycerin Suppositories U.S.P. XV
Glycyrrhiza Syrup U.S.P. XV
Hydriodic Acid Syrup N.F. X
Iodine Tincture, Strong N.F. X
Ipecac Syrup U.S.P. XV
Orange Flower Syrup N.F. X
Oxophenarsine Hydrochloride U.S.P. XV
Pine Tar Syrup N.F. X
Sarsaparilla Syrup, Compound N.F. X
Senna Syrup N.F. X
Sodium Hypochlorite Solution N.F. X
Syrup U.S.P. XV
Tolu Balsam Syrup U.S.P. XV
Wild Cherry Syrup U.S.P. XV

Table IV. Drugs Which Should Be Stored At Temperatures Not Exceeding 30° C. to 40° C.

Preferably Not Above 30° C.

Aluminum Paste U.S.P. XV
Ammonia Solution, Diluted U.S.P. XV
Ammonia Spirit, Aromatic U.S.P. XV
Ammonium Carbonate U.S.P. XV
Belladonna Extract N.F. X
Belladonna Plaster N.F. X
Cascara Sagrada Extract N.F. X
Chloroform U.S.P. XV
Chloroform Liniment N.F. X

Collodion U.S.P. XV. Store remote from fire
Collodion, Flexible U.S.P. XV. Store remote from fire
Colocynth Extract N.F. X
Colocynth Extract, Compound N.F. X
Hydriodic Acid, Diluted N.F. X
Hyoscyamus Extract N.F. X
Lard N.F. X
Lard, Benzoinated N.F. X
Liver with Stomach U.S.P. XV
Liver with Stomach Capsules U.S.P. XV
Menthol U.S.P. XV
Neomycin Sulfate Ointment U.S.P. XV
Nux Vomica Extract N.F. X
Pancreatin N.F. X
Paraldehyde U.S.P. XV
Petroleum Benzin N.F. X. Store remote from fire
Posterior Pituitary U.S.P. XV
Plaster, Adhesive U.S.P. XV
Plaster, Sterile Adhesive U.S.P. XV
Salicylic Acid Collodion U.S.P. XV. Store remote from fire
Salicylic Acid Plaster U.S.P. XV
Sodium Perborate N.F. X
Sodium Sulfate N.F. X
Stomach, Powdered U.S.P. XV
Trichloracetic Acid U.S.P. XV
Trimethadione U.S.P. XV
Trimethadione Capsules U.S.P. XV
Trimethadione Solution U.S.P. XV
Trimethadione Tablets U.S.P. XV
Urethan U.S.P. XV
Wool Fat U.S.P. XV
Wool Fat, Hydrous U.S.P.

Avoid Prolonged Exposure To Temperatures Above 30° C.

Belladonna Ointment N.F. X
Benzoic and Salicylic Acid Ointment U.S.P. XV
Calamine Ointment N.F. X
Ethyl Aminobenzoate Ointment N.F. X
Ichthammol Ointment N.F. X
Iodine Ointment N.F. X
Menthol Ointment, Compound N.F. X
Mercurial Ointment, Mild N.F. X
Mercurial Ointment, Strong N.F. X
Mercurous Chloride Ointment, Mild N.F. X
Phenol Ointment N.F. X
Pine Tar Ointment N.F. X
Resorcinol Ointment, Compound N.F. X
Scarlet Red Ointment N.F. X
Tar Ointment, Compound N.F. X
Undecylenic Acid Ointment, , Compound N.F. X
Zinc Oxide Ointment U.S.P. XV
Zinc Oxide Paste U.S.P. XV

Preferably Not Above 35° C.

Acetophenetidin and Phenyl Salicylate Tablets N.F. X
Castor Oil Capsules N.F. X
Hydrogen Peroxide Solution U.S.P. XV
Iodine Solution N.F. X
Iodine Solution, Strong U.S.P. XV
Magnesia Magma U.S.P. XV. Do not freeze
Mustard Plaster N.F. X
Phenyl Salicylate N.F. X
Phenyl Salicylate Tablets N.F. X
Tetrachlorethylene Capsules U.S.P. XV

Preferably Not Exceeding 37.5° C.

Albumin, Normal Human Serum (Dried) U.S.P. XV

Avoid Exposure To Temperatures Above 40° C.

Paraffin U.S.P. XV

Table V. Drugs For Which Excessive Heat Should Be Avoided

"The term excessive heat or excessive temperature designates temperatures above 49° C. (120° F.)", according to U.S.P. XV and N.F. X.

Ammonium Salicylate N.F. X
Benzyl Benzoate U.S.P. XV
Camphor U.S.P. XV
Chlorothymol N.F. X
Clove N.F. X
Creosote N.F. X
Ephedrine Spray N.F. X
Ephedrine Spray, Compound N.F. X
Ethyl Acetate N.F. X
Hamamelis Water N.F. X
Iodoform N.F. X
Juniper Tar U.S.P. XV
Liver, Desiccated N.F. X
Liver Fraction 2 N.F. X
Mephenesin N.F. X
Mephenesin Tablets N.F. X
Nitrofurazone N.F. X
Pepsin N.F. X
Peruvian Balsam U.S.P. XV
Phenolphthalein in Liquid Petrolatum Emulsion N.F. X
Plasma, Normal Human (Dried) U.S.P. XV
Podophyllum Resin U.S.P. XV
Protein Hydrolysate Injection U.S.P. XV
Rennin N.F. X
Sodium Bisulfite U.S.P. XV
Tolu Balsam U.S.P. XV
Trichlorethylene U.S.P. XV

Elixirs

Pepsin and Rennin N.F. X
Pepsin, Compound N.F. X

Fluidextracts
Belladonna Leaf N.F. X
Belladonna Root N.F. X
Buchu N.F. X
Cascara Sagrada N.F. X
Cascara Sagrada, Aromatic U.S.P. XV
Colchicum Seed N.F. X
Ergot N.F. X
Eriodictyon N.F. X
Gentian N.F. X
Ginger N.F. X
Glycyrrhiza U.S.P. XV
Grindelia N.F. X
Hydrastis N.F. X
Ipecac U.S.P. XV
Nux Vomica N.F. X
Rhubarb N.F. X
Sarsaparilla N.F. X
Senega N.F. X
Senna N.F. X
Squill N.F. X
Taraxacum N.F. X
Wild Cherry N.F. X

Juices

Cherry U.S.P. XV
Raspberry U.S.P. XV

Oils

Almond, Bitter N.F. X
Anise U.S.P. XV
Castor U.S.P. XV
Chenopodium N.F. X
Cinnamon U.S.P. XV
Clove U.S.P. XV
Coriander U.S.P. XV
Corn U.S.P. XV
Cottonseed U.S.P. XV
Lemon U.S.P. XV
Orange U.S.P. XV
Peanut U.S.P. XV
Rosemary N.F. X
Sesame U.S.P. XV
Turpentine, Rectified N.F. X

Ointments

Nitrofurazone N.F. X
Sulfur U.S.P. XV

Solutions

Ferric Chloride N.F. X
Nitrofurazone N.F. X
Sodium Hypochlorite, Diluted N.F. X
Thiomerosal N.F. X

Syrups
Acacia U.S.P. XV
Bromides N.F. X
Cacao U.S.P. XV

Cherry U.S.P. XV
Ephedrine Sulfate N.F. X
Eriodictyon, Aromatic N.F. X
Hypophosphites, Compound N.F. X
Raspberry U.S.P. XV
Senega N.F. X
Squill, Compound N.F. X
White Pine, Compound N.F. X
White Pine, Compound, with Codeine N.F. X

Tinctures

Aconite N.F. X
Arnica N.F. X
Asafetida N.F. X
Belladonna U.S.P. XV
Benzoin U.S.P. XV
Benzoin, Compound U.S.P. XV
Cantharides N.F. X
Capsicum N.F. X
Cardamon, Compound N.F. X
Colchicum Seed N.F. X
Digitalis N.F. X
Ferric Chloride N.F. X
Ferris Citrochloride N.F. X
Gentian, Compound N.F. X
Hyoscyamus N.F. X
Lavender, Compound N.F. X
Lemon U.S.P. XV
Lobelia N.F. X
Myrrh N.F. X
Nux Vomica N.F. X
Opium U.S.P. XV
Opium, Camphorated U.S.P. XV
Orange Peel, Bitter N.F. X
Orange Peel, Sweet N.F. X
Rhubarb, Aromatic N.F. X
Stramonium N.F. X
Thiomerosal N.F. X
Tolu Balsam U.S.P. XV
Vanilla U.S.P. XV

Table VI. Drugs Which Should Be Stored In A Moderately Warm Place

Avoid Temperatures Below 15° C.

Formaldehyde Solution U.S.P. XV

Avoid Temperatures Below 20° C.

Boric Acid Solution N.F. X

Do Not Store Under 22° C.

Ferric Subsulfate Solution N.F. X
Sodium Phosphate Solution N.F. X

Table VII. Drugs With Which Freezing Should Be Avoided

Aluminum Hydroxide Gel U.S.P. XV
Bismuth Magma N.F. X
Dihydroxyaluminum Aminoacetate Magma N.F. X
Diphtheria and Tetanus Toxoids and Pertussis Vaccine Combined, Alum Precipitated U.S.P. XV
Diphtheria and Tetanus Toxoids and Pertussis Vaccine Combined, Aluminum Hydroxide Adsorbed U.S.P. XV
Insulin Injection U.S.P. XV
Insulin, Globin Zinc, Injection U.S.P. XV
Insulin, Isophane Injection U.S.P. XV
Insulin, Lente Zinc N.N.R. 1955
Insulin, Protamine Zinc Injection U.S.P. XV
Insulin, Zinc Crystals N.N.R. 1955
Magnesia Magma U.S.P. XV
Pertussis Vaccine U.S.P. XV
Trisulfapyrimidines, Oral Suspension U.S.P. XV

Table VIII. Drugs Which Should Be Stored Remote From Fire

Acetone N.F. X
Alcohol U.S.P. XV
Alcohol, Dehydrated N.F. X
Alcohol, Diluted U.S.P. XV
Alcohol Rubbing Compound N.F. X
Amyl Nitrite U.S.P. XV
Benzyl Alcohol N.F. X
Butyl Chloride N.F. X
Collodion U.S.P. XV
Collodion, Flexible U.S.P. XV
Ether U.S.P. XV
Ethyl Chloride U.S.P. XV
Ethyl Nitrite Spirit N.F. X
Ethyl Oxide U.S.P. XV
Ethylene U.S.P. XV
Petroleum Benzin N.F. X
Salicylic Acid Collodion U.S.P. XV

Table IX. Some Drugs for Which Variations of Storage Recommendations Exist

Adrenal Cortex Injection U.S.P. XV

The U.S.P. XV does not mention a storage temperature for this preparation. However, N.N.R. states that Adrenal Cortex Extract is more stable if maintained at refrigerator temperatures.

Anti-Hemophilus Influenzae Type B Serum (Rabbit) N.N.R. 1955

The manufacturer recommends that it be stored at 2° to 10° C. No statement concerning refrigeration of this preparation is made in N.N.R.

Ascorbic Acid Injection U.S.P. XV and Sodium Ascorbate Injection N.N.R. 1955

Certain manufacturers recommend that these preparations be stored in a cold place. Neither the U.S.P. nor N.N.R. makes this recommendation.

Blood Group Specific Substances A and B, N.N.R. 1955

The manufacturer recommends that it be stored at 2° to 10° C. No statement concerning refrigeration of this preparation is made in N.N.R.

Chonodendron Tomentosum Extract, Purified N.N.R. 1955

Although N.N.R. states that the extract is "stable to light and heat", the manufacturer recommends that it be stored at 2° to 10° C.

Corticotropin Injection, Repository U.S.P. XV

Although the U.S.P. contains no statement on storage, the manufacturers recommend that it may be stored at room temperatures but not above 100° F.

Influenza Virus Vaccine, Polyvalent N.N.R. 1955

Although N.N.R. contains no statement on refrigeration, the manufacturer recommends that it be stored at 2° to 10° C.

Mercaptomerin Sodium, Sterile U.S.P. XV

Although the U.S.P. contains no statement on refrigeration, the manufacturer recommends that when the dry powder is diluted the resulting solution should be refrigerated. Thus, this is not a conflicting recommendation since the U.S.P. requirement refers to the dry powder.

Paramethadione Capsules N.N.R. 1955

The manufacturer recommends storage in a cool dry place. The N.N.R. has no statement regarding storage.

Phentolamine Methanesulfonate U.S.P. XV

The manufacturer recommends that this preparation be stored in a cool place; the U.S.P. contains no statement on storage temperature.

Phytonadione U.S.P. XV

The U.S.P. recommends storage in tight, light-resistant containers; the manufacturer recommends a cool place.

Probenecid Tablets N.N.R. 1955

The manufacturer recommends storage in a dry place, protected from light and excessive heat.

Pyridoxine Hydrochloride Solution N.N.R. 1955

The N.N.R. contains no statement on storage requirements while a manufacturer recommends that it be stored in a cold place.

Selenium Sulfide N.N.R. 1955

Although N.N.R. contains no statement on refrigeration, the manufacturer recommends that it be stored in a place protected from light and heat.

State Capitol of Georgia

THE UTILIZATION OF PHARMACISTS IN THE SMALLER HOSPITALS

by R. C. WILLIAMS

SOON AFTER THE TERMINATION OF WORLD WAR II several important factors emphasized the need for additional hospital facilities throughout the United States. The economic depression of the 1930's was followed shortly thereafter by the world-wide disturbances in the 1940's that eventually culminated into World War II. There was little or no hospital construction during the depression period because of lack of available funds. During the period of World War II, lack of materials and personnel prevented needed hospital construction except in vital industrial and military areas. Thus was the stage set for action by the Congress of the United States to enact the Hospital Facilities Construction Program which became a law of the land in August 1946. This Act is popularly known as the Hill-Burton Program. It is nation-wide in scope. Broadly speaking it is one of the most successful cooperative programs involving local, State, and Federal authorities that has been developed within the history of this country.

The administration and development of this hospital construction program in Georgia during the past five years provides the background, experience, and facts upon which this paper is based. The figures that are given in this discussion, although actually from the state of Georgia, apply generally to the other southeastern states in this area. Georgia is a large state in area. It is essentially a rural state. Although not generally emphasized, Georgia is the largest state in geographic area east of the Mississippi River. Our problem in Georgia, therefore, in developing a hospital construction program is essentially one dealing with smaller hospitals. There are in Georgia about 250 hospitals. Eighty percent of these hospitals have a capacity of only 50 beds or less. This means, therefore, that all problems that we consider in relation to hospitals in Georgia must be directed largely toward the smaller hospitals.

There are more personal contacts between employees in the smaller hospitals because they constitute a lesser number and because of their increased proximity resulting from a smaller physical plant. Smaller hospitals are usually located in smaller towns and it is a well established fact that people in such communities are more interested in the activities of each other because of their more numerous contacts. Relationships in smaller hospitals are further intensified by the variety of personnel, both professional and nonprofessional, needed to staff the various areas of a hospital.

Utilization of Nonprofessional Personnel

Inter-area problems are magnified in the smaller hospitals because of the close contact between hospital employees. Since the hospital construction program began in Georgia many persons have

R. C. WILLIAMS, M.D., is Director, Division of Hospital Services, State of Georgia Department of Public Health.

raised the question as to why such hospitals should be built while there was such a definite shortage of personnel needed to staff those hospitals. Registered nurses, laboratory technicians, and other professional and skilled personnel are in short supply. It has been the experience in Georgia that none of the new hospitals that have been constructed and opened have been delayed in beginning their work because of a lack of necessary personnel. We point proudly to a total of 50 new hospitals in this state. The plan that has been used successfully in Georgia has hinged upon the fact that trained professional personnel have been utilized in a supervisory capacity with nonprofessional and less well-trained individuals. In the smaller hospitals of Georgia probably 70 percent of the bedside care of patients is given by licensed practical nurses or by nurses' aides. This includes attention to the physical wants of the patient such as the giving of baths, the serving of meals, the making of beds, and similar services. The administration of drugs, the care of acutely ill patients, particularly post-operative cases, are under the immediate care of registered nurses. Thus we have utilized the professionally trained nurse to do professional work requiring technical training.

Recognizing the need for special attention to the improvement and administration of hospitals of one hundred beds or less, there was developed in 1952 at the Georgia State College of Business Administration in Atlanta (formerly called the Atlanta Division of the University of Georgia) a course of instruction in hospital management that is intended primarily to train persons to administer hospitals of one hundred beds or less. In contrast to all of the other collegiate courses in hospital administration that require a bachelor's degree for admission and give a master's degree upon completion of two years of training, this course of instruction offers a certificate in hospital administration. The instruction in hospital management at the Georgia State College of Business Administration in Atlanta gives preference to persons with college degrees or with college training but does admit selected persons who have had at least two years of experience in hospital work but who may not have had college training.

The tradition that comes to us from the mythology of the ancient Greeks is that Aesculapius is the father of medicine and that he had two daughters, Panacea and Hygeia. These daughters, Panacea (all-healing) and Hygeia (averter of ills), are said to have worked together in the Greek temples of healing. From the names of these legendary daughters of the father of medicine, we recognize two words that are in common use today: panacea, a cure-all, and hygiene, science of the prevention of disease. Thus we note with interest that the ancient Greeks recognized two broad divisions of medical activity, prevention of disease and treatment of disease.

The advances in medical science during recent decades are rapidly narrowing the gap between the prevention of disease, and the treatment of disease. This is encouraging and augurs well for the future.

Hospital Health Center

The hospital today is rapidly assuming the role of the health center of the community. The modern medical care of the present is in reality a combination of the curative medicine and of preventive medicine. Such a program has been referred to as health maintenance. To be successful this requires coordination of effort by many members of the health team working together through integration and planning. It is at the community hospital that we most often find the crisis and there we put to the crucial test the cooperative endeavor of the health team on the behalf of the patient. Even the smaller community hospital is a real medical center. Its many pharmaceutical and chemotherapeutic agents are essential to the adequate care of the patient. It is necessary that selection, use, and control of these important agents be done by competent members of the health team. The qualified pharmacist is an important member of this team. This brings us face to face with the certain practical economic considerations.

In Georgia there is a broad assumption that a hospital with less than one hundred beds cannot afford a full-time pharmacist. There are exceptions to this but in general that rule is largely followed throughout the state. Practically all hospitals in Georgia of one hundred beds or more have one or more full-time pharmacists. These trained professional persons are daily rendering necessary and highly technical service to patients throughout the state, thus furnishing the essential care and necessary safeguards for the protection and treatment of the patient.

Within the past two decades there have been revolutionary discoveries in the fields of chemistry, medicine, and pharmacy. The sulfonamides and the antibiotics have opened vast new vistas of therapy. The results have been dramatic. Hospital design and operation have been markedly influenced. The early ambulation of patients following surgery has brought many changes. New therapeutic agents and the increased use of parenteral solutions have made necessary the enlargement of the activities of the hospital pharmacist and increased his responsibilities.

Need For Part-Time Pharmacy Services

It is recognized that the quality of patient care should be the same in all hospitals regardless of the size or the type of the condition. Many hospitals, particularly those with less than 50 beds, cannot afford the services of a pharmacist on a full-time basis. As previously indicated about 80 percent of the hospitals in Georgia, and in fact the entire United States, have less than 50 beds. Various plans are used by different hospitals to provide proper safeguards through professional supervision by trained pharmacists in handling the drugs at the smaller hospitals. In some communities where there are several pharmacists, a hospital will use an individual pharmacist on a rotating monthly basis. In other areas a pharmacist is selected for a longer period to serve as consultant. In some instances there is rotation on a quarterly or even an annual basis.

At the present time in Georgia a 50 bed hospital usually purchases approximately $15,000.00 worth of drugs and medical supplies each year. This indicates that thousands of dollars worth of drugs and medical supplies are purchased annually by the smaller hospitals. Careful purchasing of such supplies for hospitals under the supervision of a professional pharmacist will insure wise selection and significant savings in procuring such supplies for these hospitals. The average 50 bed hospital in Georgia usually maintains a drug and pharmaceutical inventory that varies in value from $2,500.00 to $3,500.00.

Hospitals throughout the state recognize the value of the service of pharmacists in the purchase of drugs, in keeping their medical personnel informed of new drugs that have been developed, and in adhering to dependable and proven therapeutic agents.

Formulary

The Division of Hospital Services of the Georgia Department of Public Health secured the cooperation of the Dean and faculty of the School of Pharmacy at the University of Georgia in Athens, three or four years ago, to develop a suggested hospital formulary that could be used by hospitals in the state. This formulary, prepared through the courtesy of Dean Kenneth L. Waters and members of the faculty, has been of definite value as a guide to the new hospitals that have been opened in the state under the hospital program as well as to existing hospitals who wish to keep within reasonable bounds the expenditures that are made for their drug room stock.

It is interesting to note that the course of instruction in hospital administration developed at the Georgia State College of Business Administration in Atlanta has attracted as students several pharmacists who were interested in hospital administration. Those pharmacists who have completed the course of instruction have proven to be excellent students, and almost without exception, competent administrators in managing the affairs of the hospitals where they served as administrator. There are two pharmacists in the current class of 26 persons who are attending this instruction.

Other examples of pharmacists who are performing other duties at hospitals includes some who undertake clinical laboratory work or x-ray services. In larger hospitals pharmacists sometimes have supervision of central sterilizing and supply services.

Important Services

The services of a pharmacist whether on a full-time or part-time basis are especially important for a hospital in connection with policies and procedures for the requisition, storage, labeling, distribution, and dispensing of drugs.

Of especial importance are the precautions that must be established and followed in the handling of narcotics, hypnotics, and other drugs requiring control and safety measures. The guidance of the pharmacist is essential for proper care of biologics and antibiotics that have expiration dates and that must be stored with the required refrigeration standards.

There are different approaches utilized with many of these problems in the smaller hospitals. The method used varies with the size of the hospital and with the community. There are, of course, different legal requirements in the several states. In handling these problems the pharmacy profession must work closely with hospital administrators, hospital governing boards, and medical staffs to meet the needs of individual hospitals.

Summary

In the smaller hospitals where the full-time services of a pharmacist cannot be justified it is essential that sound plans be developed to provide adequate pharmaceutical services through local pharmacists who are available.

Pharmacists serving a hospital on a part-time basis must devote a sufficient amount of time to the hospital to adequately meet his responsibilities. Generally speaking these responsibilities are:

1. The purchasing, storing, labeling, and dispensing of all drugs.
2. A periodic inspection of drug stock in the store room and in all nursing service areas of the hospital.
3. To develop and improve a closer relationship with all professional groups of the hospital in order to provide and improve needed pharmaceutical services.

the role of the pharmacist in a rural medical center

by MARJORIE O'BOYLE

IN THE PRESENTATION OF THIS PAPER I will try to give a general idea of how a dream became a reality to the ill and potentially ill people of a rural community.

It is a known fact that in a rural area there are many people who do not have the benefit of medical care. This is an injustice to the individual who is suffering from the illness and to the health of the community as a whole. The whys and wherefores of this situation as it exists are also known. The limited number of physicians in these areas make it impossible to give the people complete medical care. In many instances there is no hospital in the immediate vicinity to offer emergency treatment. Another factor which contributes to the inadequate medical care as it exists is the failure to educate the people concerned with the importance of health problems as they exist today.

Hunterdon County in New Jersey was a perfect example of just such a situation before the opening of Hunterdon Medical Center in July

MARJORIE O'BOYLE is Chief Pharmacist at the Hunterdon Medical Center, Flemington, N. J.

Presented at the Annual Meeting of the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS, May 1, 1955, Miami Beach, Fla.

1953. As late as 1946, when the idea for a hospital in this rural county was being developed, only five of the thirty-two physicians in the county had hospital appointments and none of the five was a surgeon or specialist. Most cases were treated in the home and emergency cases had to be taken out of the county. There were practically no preventive health services. The situation was finally brought to the attention of the County Board of Agriculture through the efforts of the Director of County Welfare.

At one of the board meetings Dr. E. H. L. Corwin of the New York Academy of Medicine appeared as a speaker. It was his idea to erect a rural hospital incorporating a public health center and to tie it in with a big city medical center so that it could have a real diagnostic center and an intern and resident staff that most small hospitals do not have. The money for this undertaking was to be collected from the residents of the county without the aid of professional fund raisers. In spite of the existing medical problems in the county, it was quite a job to educate the residents as to the absolute need of a hospital in their county. However, once this was accomplished three out of four families in Hunterdon County contributed to the building fund.

The Medical Center

On July 3, 1953 Hunterdon Medical Center opened its doors to the public and a dream became a reality.

The Center is divided into three major areas; Nursing Wing, Medical Service Core, and Ambulatory Wing.

The Nursing Wing is made up of five services: Medical, Surgical, Obstetrics and Gynecology, Pediatrics, and Convalescent. Since there is no nursing school connected with the Medical Center these services are staffed with graduate nurses. Nursing service clerks relieve the nurses from as much non-nursing work as possible and they are augmented by volunteer workers. Patients receive individualized care and there is no such thing as a ward case in terms of treatment.

The Nursing Wing is connected to the Ambulatory Wing by the Special Service Core. On the second floor of this connecting wing are located X-Ray, Emergency Room, and Pharmacy departments; on the third floor the Laboratories, Medical Library, and Blood Bank.

The second floor of the Ambulatory Wing encompasses a series of examining rooms and the third floor houses the Physical Therapy department and doctors' offices.

Organization and Operation

I have given a brief description of the hospital building itself so that the operation of the Center may be better understood. I will now attempt to explain the medical operation of this Medical Center and lead into the role the pharmacist plays in such an institution.

The Center appoints a staff of ten full-time specialists augmented by several part-time specialists and nine residents, interns, and medical students. These specialists have no outside medical practice. Their offices are on the third floor of the Ambulatory Wing. The relationship between these men and the local general practitioners is a most desirable one. All physicians in the county who are in good standing are on the hospital staff. The specialists see patients only when the local physicians refer them to the Center for diagnostic work. They do not go to the patient's home except when called in for consultation by the family doctor. However, they actively guide the work of the family physician to the extent necessary in inpatient care.

Speaking in broad terms the local physician is free to practice medicine to the best of his learning and ability. However, the type of medicine practiced is closely supervised by the chief of each service. If a better course of therapy is available the specialist will advise the general practitioner of such; also, the type of medication and dosage used on hospitalized patients is closely checked by the specialist staff. This promotes good sound drug usage and offers the local physician an education in the best and most modern therapeutics in use today.

The local men may perform minor operations and uncomplicated deliveries and can assist the surgeon and obstetrician in the more complex cases. This certainly tends to give the patient a feeling of confidence as it eliminates unnecessary operations and offers the obstetrical patient the care needed for a safe delivery when complications arise.

The full-time staff of specialists was carefully chosen by the hospital's Board of Trustees and hold faculty appointments in New York University-Bellevue Medical Center.

The interns, residents, and medical students are under the supervision of the Director of Internal Medicine serving as chairman of the House Staff Committee and of the Chief of Service on which they are currently working. Since a Center such as this sees the problems of the entire community, it offers a variety of cases which may rarely be seen in the city. This provides an excellent opportunity for those in a learning capacity to acquire first hand knowledge of illnesses they may only

have read about in medical school and would not have the opportunity to see in hospitals located in metropolitan areas.

Perhaps I have made the development of an operation of such an institution sound like an easy task; it is far from that. After almost two years of operation many of the opening problems have been overcome. However, in the beginning there were almost unsurmountable obstacles to hurdle and the Pharmacy Department had more than its share. As in all new institutions there were personality problems to be overcome but because every employee was so busy with his or her own job this obstacle faded faster than the rest.

Pharmacy and Therapeutics Committee

When I was hired as pharmacist for the Medical Center I was given two weeks to set up the Pharmacy Department, order all the drugs, and stock the floors for opening day. I would never recommend that any person attempt to undertake such a task in so short a time. Before my arrival a Pharmacy Committee had been formed of which I am a member, acting as secretary without a vote. The Committee had compiled the hospital formulary which was certainly a life and time saver. The formulary lists the drugs to be used in the hospital by generic name whenever possible and sets down the rules which physicians must follow in ordering drugs. By following the formulary I was able to complete all direct buying within a four day period. The formulary does eliminate duplication of drugs but does not restrict a physician in his practice of medicine. If he wishes to use a nonformulary item he may do so by supplying the information required by the Pharmacy Committee, *e.g.*: name of medication, dosage form desired, amount to be used for the patient, and the reason for the drug desired in preference to one listed in the formulary. He orders with the knowledge that his patient must pay for the least quantity ordered by the Pharmacy since such an item will not become a regularly stocked item unless approved by the Pharmacy Committee. Since the Pharmacy Committee is made up of three specialists, two family physicians, and the pharmacist, there is no ill will created over the type of items stocked or the rules by which they must be ordered as the general practitioner feels he is fairly represented.

It is of interest to note that the formulary contains very few marketed products that contain more than one ingredient. No vitamin preparation that contains folic acid or vitamin B_{12} is listed as it is the belief of the staff that these latter two will mask the symptoms of pernicious anemia.

A View of the Pharmacy.

The Pharmacy stocks one multi-vitamin preparation, Hexavitamin, U.S.P. No therapeutic vitamin is found in the Pharmacy. If a physician wishes a therapeutic dose of vitamins he doubles the dose of the multi-vitamin preparation. Vitamin B_{12} and folic acid are stocked separately to be used as indicated. This allows the physician to practice vitamin therapy on a rational basis and eliminates duplication of stock in the Pharmacy. This not only reduces inventory costs but releases shelf space in the Pharmacy that would be occupied by such additional products and allows it to be used for other necessary drug items. The formulary also lists special hospital formulas which are prepared in the Pharmacy. Items that come on the market and are applicable to hospital use on a rational level may be stocked in the Pharmacy on a trial basis with the approval of the Pharmacy Committee. The Committee meets twice a year and decides if the trial drugs are to become a part of the formulary and if other items already in the formulary may be eliminated. The formulary is revised when the Committee deems it necessary and it is in the process of being revised.

It is a great advantage to the pharmacist to have a full-time specialist staff in the hospital so that when any problem pertaining to the usage of a drug arises it may be settled immediately. To cite an example, if I question the dosage of a drug to be used, I call the chief of the particular service involved and not only receive the go-ahead or correction on dosage but also the reasons why such a dose is being used. This can all be accomplished in a matter of minutes with no inconvenience to the patient or service involved.

Pharmacy Service To Floors

Pharmacy service to the floors differs from that of many hospitals. Nursing stations are stocked with free floor stock as in other institutions. These

Miss Marjorie O'Boyle, Chief Pharmacist, at Schwartz Cabinet.

items are requisitioned on a printed form and these forms are kept in the Pharmacy for ready reference. However, the handling of special medications differs from the way they are handled in many other institutions. Special medications, except for very recent items or drugs rarely used, are handled on a replacement basis. Each service is stocked with a specified number of intravenous fluids and units of plasma and Plavolex. When an intravenous fluid or unit of plasma is used, an intravenous fluid requisition sheet is made out for the individual patient. These sheets list the intravenous fluids which the Pharmacy stocks. All the nurse must do is fill in the name of the patient, floor, name of doctor ordering, and her name, and insert the number alongside of the item used. When these forms are received by the Pharmacy the number of units and the number of sets used are sent back to the floor to bring its floor stock to the standard number originally issued to that service. Penicillin and streptomycin are handled in the same manner as are tablets and emergency ampuls. Ampuls considered as emergency items are stocked on all floors, in addition to their stocks of commonly used injectibles. When the charge requisition comes to the Pharmacy the service receives its replacement.

Tablets and capsules are issued in containers like those for free floor stock. They are labeled with the name of the service, medication, type of medication, *e.g.* tablet or suspension, and dosage form. The labels for special medication differ from those for free floor stock in that an "X" is added on each side of the name of the service. This designates that the item is a chargeable drug and that a requisition slip must be made out on a twenty-four hour basis. A regular pharmacy requisition slip is used for such items.

All requisition slips, except those for floor stock, are given a number and kept on file as prescriptions for easy reference at a later date. All charge slips sent to the business office for listing on the patient's bill are sent with a prescription number and not the name of the medication. If, for some reason, an itemized bill is desired there is no problem as the prescription numbers are presented to the Pharmacy by the business office and the names of the medications and dosages are supplied quickly and with little effort.

Perhaps this system of replacement of drugs raises the question as to whether we encounter any loss of drugs and ultimately financial loss to the Pharmacy Department. There is some small loss as there always will be with such a system. However, the amount of money saved in avoiding the use of extra containers and labels, and in nursing and pharmacy time, greatly offsets any loss that may be incurred. Also, such a system eliminates the need for the night and weekend nursing supervisor to spend valuable time in coming to the Pharmacy to obtain special medications. More important than any of the above reasons is the availability of drugs to the physician for immediate use for his patients.

The Pharmacy services the floors with three pick-ups of requisitions a day. In the morning the porter picks up the drug baskets. At noon the Pharmacy secretary picks up the vials to be filled with narcotics and hypnotics and all requisitions that have accumulated since the basket pick-up. These requisitions are filled and returned with the baskets when they are delivered at one o'clock. At 2:45 P.M. the narcotics are delivered to the floors and signed for, and at that time any requisitions that have been written since noon are picked up, filled, and delivered immediately. All stat and emergency orders will be filled in between pick-ups if brought to the Pharmacy by nursing personnel.

The aim of the Pharmacy is to save as much time as possible and ease the work that must be done not only in the Pharmacy Department but especially in the Nursing Department where the help situation is sometimes critical.

Narcotics

There is an emergency narcotic box in the Pharmacy containing one vial of each narcotic and hypnotic stocked on the floors. This box is bolted from the inside to a metal counter. There are only two keys to it, the pharmacist's key and the one in the possession of the Director of Nurses. This box has been a life saver on weekends when an unexpected amount of narcotics or hypnotics is used on any service. If a floor runs out of such an item the Director may obtain the vial from the emergency box by signing the proper forms. This eliminates borrowing from other floors and aids in keeping narcotic records straight.

Cooperative Efforts

I can truthfully say that I am proud of the cooperation I have received from the nurses at the Center. It was difficult at first for them to get used to the policies of the Pharmacy since they had come from so many different institutions, each one doing things a little different than the others. However, once they were acquainted with the rules of Hunterdon Medical Center and the whys and wherefores of them they were willing to cooperate with the Pharmacy Department. Whenever a problem arises the supervisor of the services involved is called to the Pharmacy. The situation is discussed and settled if possible. If it cannot be solved on this level then the Director of Nurses is notified and the problem is brought up for general discussion. This happens rarely, usually when more than one member of the nursing personnel is involved. Since harmony between departments is stressed at the Medical Center, all personnel are only too eager to cooperate in the settling of differences.

If there is something to be corrected in the professional actions of interns, residents, or medical students it is brought to the attention of the chairman of the House Staff Committee. When there is a question that cannot be solved by discussion with any of the departments or chief of services, the Director of the Hospital is always there with the answer.

I have mentioned that the specialists see patients referred to them by the general practitioners. They see these patients in examining rooms in the Diagnostic Center. These rooms must be stocked by the Pharmacy according to the requirements of each specialist. Drugs are requisitioned in the same manner as floor stock items from the floors and are charged to the operation of the Diagnostic Center. If a specialist writes a prescription for a patient, the patient is free to have it filled at the pharmacy of his or her choice. Many come to the hospital pharmacy for this service; however, we do not encourage this practice as we have no intention of going into competition with the local retail pharmacist. When we do fill such prescriptions they are priced on a retail basis.

One of the first things I did when I started work in Flemington was to visit the local retail pharmacists. Since there had never been a hospital or a hospital pharmacy in the area, it was important that they should understand our operation and we theirs. It is very important in a rural community that there be complete harmony and cooperation between the retail and hospital pharmacist. You never know when you may have to call upon them, or they upon you, for some drug that otherwise could not be obtained for several days. Whatever is borrowed from one another is returned when shipment of the item is received. This eliminates billing for drugs obtained and also there is no 10% handling charge as is often the case under different arrangements.

Research Activities

The hospital is actively engaged in research work. There are times when the Pharmacy is called upon to provide special preparations for a particular investigation. Animals are used for some of the work and there is a close association between the hospital and Ortho Laboratories on much of the research work.

The Pharmacy is also a distributing agent for State Biologicals and Rheumatic Fever Control Program drugs. It supplies prices for drugs furnished by the Cancer Society free of charge to cancer patients who are eligible for this service.

Pharmacy Bulletins

The Pharmacy has now started to issue Pharmacy bulletins. The Bulletin provides the specialists, residents, interns, medical students, nurses, and general practitioners with information pertaining to the latest drugs on the market that are applicable to hospital use. In this way the Pharmacy hopes to acquaint the medical services with drugs and their actions so that if and when they are used in the hospital the staff will be familiar with them.

The Mental Health Program and Multiple Screening Program are very important projects of the Center. These two projects are the best way to determine the problems of not only rural people but also people living in metropolitan areas.

The hospital is only in its infancy but it is involved in essentially every type of health care. It is an experience and an education to grow with any institution, especially when it is a teaching medical center associated with the New York University-Bellevue Medical Center. As a pharmacist I am proud to be a part of such a new idea in medical care.

development of a prophylactic BABY OINTMENT

by Sister Cecilia Marie S.S.M.
and C. Lee Huyck

One of the problems associated with baby care is that of preventing the formation of a diaper rash. In infancy, irritation or excoriation of the skin beneath the diapers is a common annoyance. In addition to the irritant effect of moisture from sweat and urine, there may be the burning erythema produced by organic acids in the stool or by ammonia which results from bacterial decomposition of the urine. In order to avoid the irritation which is produced by these effects, it is advisable to keep the skin covered with a protective ointment or cream.[1]

Based upon this reasoning, an ointment was prepared using 13 percent zinc oxide, 13 percent starch, and 30 percent lanolin in a cold cream base. This ointment proved to be much too thick and hard to remove. A study was then made to develop an ointment containing zinc oxide, starch, and lanolin in a base which would be protective, emollient, easily applied, and washable

Sister Cecilia Marie is a Graduate Student and C. Lee Huyck is a Professor of Industrial Pharmacy at the St. Louis College of Pharmacy, St. Louis, Mo.

Experimental

Four ointments were prepared having the following formulas:

Formula 1	*Percent*	*Formula 2*	*Percent*
Zinc Oxide	10	Zinc Oxide	10
Starch	10	Starch	10
Lanolin	30	Lanolin	30
Cold Cream	20	Hydrosorb**	50
White Petrolatum	30		

Formula 3	*Percent*	*Formula 4*	*Percent*
Zinc Oxide	10	Zinc Oxide	10
Starch	10	Starch	10
Lanolin	30	Lanolin	30
Washable Base	50	Hydrophilic Ointment, U.S.P.	50

The washable base in formula 3 contained:

	Percent
Stearic Acid	12.5
Span 60	10.0
Tween 60	6.0
Water	71.5

Five pound batches of each of the above ointments were prepared by levigating the zinc oxide

TABLE I. STABILITY OF OINTMENTS AT VARIOUS TEMPERATURES AFTER SIX WEEKS

Formula	Room Temperature	37°C	8°C
1	no separation	very slight separation	no separation
2	very slight separation	moderate separation	no separation
3	very slight separation	very much separation	no separation
4	no separation	very slight separation	no separation

and the starch with the lanolin until a smooth paste was formed and then incorporating the base. The ointments produced were smooth and entirely free from grittiness. Nothing unusual was observed in the preparation of formulas numbered 1, 2, and 3. With formula 4, however, upon addition of the Hydrophilic Ointment, the resulting mixture was of paste-like consistency.

The ointments prepared were tested for (a) their stability at various temperatures, (b) their water absorbing ability after subjection to these temperatures; and (c) their consistency according to Fredell's test[2] which relates to their spreadability and consistency. They were also subjected to clinical trial on newborn babies and evaluated for their washability, spreadability, and effectiveness.

Results And Discussion

Ointment formula 1 proved to be very stable, as shown by Tables I and II. All of the characteristics of the ointment were favorable with the exception of its washability. Rather than to be removed by water, the ointment tends to absorb water up to almost three times its weight as shown in Table 2; however, after absorbing the water, the spreadability of the ointment is greatly altered and it rolls up on the skin. This lack of washability is to be expected from lanolin, cold cream and petrolatum bases, since their predominant characteristic is to be oily and greasy.[3]

TABLE 2. WATER ABSORBING ABILITY, GRAMS OF WATER PER GRAM OF OINTMENT

FORMULA	ROOM TEMP.	37°C	8°C
1	1.3	2.8	2.6
2	3.1	2.8	2.7
3	0.2*	0.3*	0.2*
4	1.2*	1.7*	1.2*

*At this point there was loss of ointment consistency, but still miscibility with water.

Ointment formula 2 is similar to formula 1 in that its base is also of the oily, greasy type, like lanolin and Hydrosorb.** Here again, though it was effective, emollient, and very easily spread, its washability was not good. Since both lanolin and Hydrosorb may be classed as W/O absorption bases[4], it would be expected to absorb an even larger amount of water than ointment formula 1; however, this did not prove to be consistently true as shown in Table 2.

Ointment formula 3 was made with a base that is specifically classified as a washable ointment base.[4] This ointment was not too stable as shown by the separation of lanolin at room temperature and at elevated temperature. Although all of its characteristics were acceptable, its washability was unique. After the addition of only a very small amount of water, the ointment liquefied and became a milky solution and particles of lanolin were visible. Upon continued addition of water the lanolin completely separated.

** Ointment base made by Abbott Laboratories, Chicago.

TABLE 3. CLINICAL EVALUATION OF OINTMENTS (EACH OINTMENT USED ON 20 BABIES)

FORMULA	WASH-ABILITY	SPREAD-ABILITY	EFFECTIVE-NESS
1	Good	Good	Good
2	Good	Very Good	Good
3	Very good	Good	Good
4	Fair	Fair	Very Good

TABLE 4. CONSISTENCY OF OINTMENTS ACCORDING TO FREDELL'S METHOD[2]

FORMULA	AFTER 1 MINUTE	AFTER 5 MINUTES
1	5	5
2	2	2
3	9	6
4	9	7

Ointment formula 4 made with U.S.P. Hydrophilic Ointment had a firmer consistency than the other ointment bases as shown in Table IV; hence, its spreadability was not very good. Its washability was also hindered because of its paste-like consistency; however, its water absorbing power showed it to be readily miscible with water. The effectiveness of ointment formula 4 appeared to be greater than the other formulas; perhaps this can be explained by the fact that with Hydrophilic Ointment the medicinal ingredients are brought more directly in contact with the skin.[5]

Conclusions

From these experiments it is evident that of the ointments studied, formula 4 is the most satisfactory and fulfills the desired requirements for a prophylactic baby ointment. Its stability and effectiveness were excellent and although its washability and spreadability were not perfect, they were at least satisfactory.

REFERENCES

1. Jeans, Philip C., et al: *Essentials of Pediatrics*, 5th ed., J. B. Lippincott Company, 1954, p. 434.

2 Fredell, Walter G.: Measuring Ointment Firmness, *J. Am. Pharm. Assoc., Pract. Pharm. Ed. 12*:170 (Mar.) 1950.

3. Ehrenstein, Elsa: Modern Ointment Bases, *Am. Profess. Pharmacist 16*:875 (Oct.) 1950.

4. Wurster, Dale E.: New Ointment Bases, *Am. Profess. Pharmacist 18*:704 (Aug.) 1952.

5. Scoville's *Art of Compounding*, The Blakiston Company, New York, 1951, p. 329.

TRIBROMOETHANOL SUPPOSITORIES

by Louis D. Hauser *and* W. Howard Hassler

Tribromoethanol was introduced into medicine in 1926 as a "fixed-dose" anesthetic for rectal administration.[1,2] Since that time it has been praised by many and denounced as dangerous by others. Its main use today is for basal anesthesia in conjunction with other agents, usually the inhalation anesthetics.

Tribromoethanol appears to be potentially irritating to the rectum when injected as a solution. Many authors state that there is no rectal irritation; however, there are a number of recorded instances of irritation[1,3,4] and rectal disorders are definitely considered as contraindication.[5,6]

The rectal irritations occurring from tribromoethanol solution are reportedly due to faulty preparation of the solution which results in the breakdown of the tribromoethanol.[6,7]

Tribromoethanol solution has been found to produce rectal irritation in rabbits.[8] Maloney reports visceral lesions and degenerative changes in the heart, liver and kidneys when tribromoethanol solution is administered to rabbits.[9]

Barlow and Gledhill have shown that to produce moderate surgical anesthesia in the rat it took only 37.5 percent of M.L.D. of tribromoethanol, while tribromoethanol solution required 46 percent of M.L.D. Amylene hydrate, the solvent for tribromoethanol, alone required 78.5 percent of

Abstracted from a thesis submitted by Louis D. Hauser to the University of Tennessee, School of Pharmacy, in partial fulfillment of the requirements for the degree of Master of Science in Hospital Pharmacy.

W. Howard Hassler is Assistant Professor of Pharmacy, University of Tennessee, Memphis, Tennessee; Pharmacist, West Tennessee Tuberculosis Hospital, Memphis, Tenn.

TABLE I

Group	Rabbit No.	Dose in Mg./Kg.	Anesthesia[a] Induction	Anesthesia[a] Duration	Ulceration of Lower Colon Extensive	Ulceration of Lower Colon Slight	Ulceration of Lower Colon None	Deaths
Tribromoethanol	1	275	10	161	x			4th day
No. 1 Solution	2	275	7	41		x		b
U. S. P.	3	315	8	44		x		6th day
	4	325	6	61	x			b
	5	350	6	85	x			5th day
Tribromoethanol	6	275	6	29			x	b
No. 2 Carbowax	7	275	5	48	x			b
400 Solution	8	325	7	41		x		b
	9	350	6	45		x		b
	10	350	6	54	x			4th day
Amylene	11	275	—	—			x	b
No. 3. Hydrate	12	275	—	—			x	b
Solution	13	325	—	—		x		b
	14	480	17	27		x		b
	15	480	9	21			x	b
Tribromoethanol	16	275	—	—			x	b
No. 4 Suppository	17	275	25	5			x	b
	18	350	25	25			x	b
	19	587	20	31			x	b
	20	587	19	67			x	b

a. Induction was taken as the time in minutes from administration to loss of righting reflex and duration was the time in minutes from induction until the righting reflex was regained.

b. These animals were sacrificed on the eighth day.

M.L.D. to produce anesthesia.[10] This indicates that tribromoethanol alone would be safer than when in combination with amylene hydrate. Also, it has been reported that the addition of amylene hydrate does not affect the absorption or distribution of tribromoethanol in the body.[11] A large dose slowly absorbed is not followed by as severe toxic effects as is a small dose rapidly absorbed.[1]

After studying the relative merits of tribromoethanol and after weighing its disadvantages and the toxic effects produced when it is administered in amylene hydrate aqueous solution, it was decided to study the possibilities of a new method of administration.

Since suppositories are more convenient to use than an enema we formulated tribromoethanol *suppositories using a base comprised of 70 percent Carbowax 6000 and 30 percent Carbowax 1540. The concentration of Carbowax 6000 in this base is much higher than would normally be used because tribromoethanol lowered the melting point of the base.

*Supplied by Sterling-Winthrop Research Institute, Rensselaer, N. Y.

The procedure for making these suppositories was as follows:

The carbowaxes were melted on a water bath (care being taken not to exceed 70° C), the tribromoethanol added and the mixture stirred until solution was complete. It was then poured into molds and allowed to cool.

The suppositories were stored in amber bottles at room temperature. At intervals of one month each, sample suppositories were removed, dissolved in water and tested with Congo Red solution. No evidence of decomposition was observed until the seventh month.

In preparing the tribromoethanol suppositories it was observed that the tribromoethanol was completely soluble in the Carbowaxes. A solution was prepared using Carbowax 400 as the solvent for tribromoethanol instead of amylene hydrate. One gram of tribromoethanol was soluble in one-half ml. of Carbowax 400 and yielded a solution containing one gram tribromoethanol in each ml. This solution can be diluted and administered the same as tribromoethanol solution and has the advantage of having a pharmacologically inert solvent in the amounts used.

In order to evaluate the effectiveness and toxicity of the tribromoethanol suppositories, four groups of rabbits were used, each group consisting of five animals. This was done realizing that the toxic effects produced in rabbits by tribromoethanol are much greater than those produced in man. The groups were arranged as follows:

GROUP No. 1—tribromoethanol solution (Avertin solution).** In Group No. 1 the Avertin solution was diluted and tested according to company directions immediately before use.

GROUP No. 2—tribromoethanol in Carbowax 400. Group No. 2 was prepared exactly as Group No. 1 except the tribromoethanol was dissolved in Carbowax 400 instead of amylene hydrate.

GROUP No. 3—amylene hydrate*** solution. Group No. 3 was identical in preparation to Group No. 1 except there was no tribromoethanol in the solution.

GROUP No. 4—tribromoethanol-Carbowax suppositories. Group No. 4 was prepared by the method previously outlined.

Each rabbit was given the drug assigned to it for seven consecutive days. During these tests the following observations were recorded: (a) onset of anesthesia (judged by loss of righting reflex); (b) duration of anesthesia (judged by regaining righting reflex); and (c) miscellaneous observations.

If the animal survived until the eighth day the animal was sacrificed and autopsies performed. Sections of the lower colon, liver and kidney were sent to the laboratory where pathological studies were performed.****

The results obtained from these four groups of animals are tabulated in the accompanying table.

Discussion

From the results shown in Table I it is obvious that whether amylene hydrate or Carbowax 400 is used to solubilize tribromoethanol ulcerative lesions in the lower colon occur frequently in rabbits. The lesions that occurred definitely were not caused by faulty preparation of the solution as previous authors have contended.[6,7] Every precaution was taken and company directions followed explicitly.

From the results shown in Group No. 3, Table I, it would be quite probable that the tribromoethanol solution (Avertin solution) would continue to show the largest percentage of extensive ulceration since amylene hydrate alone causes slight ulceration.

As noted in Groups No. 1 and No. 2, Table I, the duration of anesthesia was more pronounced in Group No. 1 than in Group No. 2. This is probably due to the fact that amylene hydrate used to solubilize the tribromoethanol in Group No. 1 is a CNS depressant while Carbowax 400 used to solubilize the tribromoethanol in Group No. 2 does not share this action.

As noted in Group No. 4, Table I, there was no ulceration from the tribromoethanol suppositories, even when the dosage was increased past the lethal dose for Avertin solution. This is probably due to the fact that it was much slower dissolved and had time to be absorbed as it dissolved from the suppository thus preventing an irritating concentration from accumulating in the intestine. This result agreed with the statement by Beecher that a large dose slowly absorbed is not followed by as severe toxic effect as is a small dose rapidly absorbed.[1]

Conclusions

1. A tribromoethanol suppository, stable for seven months, has been formulated using Carbowaxes as the base.

2. Tribromoethanol suppositories caused no irritation of the lower colon when used for seven consecutive days on rabbits.

3. Tribromoethanol solution (Avertin solution) and tribromoethanol - Carbowax 400 solution caused a high incidence of extensive ulceration when used for seven consecutive days on rabbits.

4. Amylene hydrate solution without tribromoethanol causes slight ulceration in a large portion of rabbits when used for seven consecutive days.

**Winthrop Stearns, Inc. Purchased on the open market.

*** Supplied by Sterling-Winthrop Research Institute, Rensselaer, N. Y.

**** Pathological studies performed by Dr. Luis Prieto, Pathologist, West Tennessee Tuberculosis Hospital, Memphis, Tennessee.

REFERENCES

1. Beecher, H. K.: *J. Am. Med. Assoc. 111*:122 (1938).
2. Collins, V. J.: *Principles and Practice of Anesthesiology*, Lea and Febiger, Philadelphia, 1952, pp. 160-162.
3. Mueller, L. B.: *Anesth. & Analg., 16*:36 (1937).
4. Cole, L.: *Lancet, 2*:246 (1935).
5. Yinger, S. C.: *Arch. Otolaryngol., 50*:290 (1949).
6. Wood, D. A.: *Anesth. & Analg., 12*:38 (1933).
7. Killian, H.: *Anesth. & Analg., 18*:24 (1929).
8. Molitor, H., and Robinson, H.: *Anesth. & Analg.: 17*:258 (1938).
9. Maloney, A. H.: *J. Pharmacol. Exper. Therap.: 75*:247 (1942).
10. Barlow, O. W., and Gledhill, J. D.: *J. Pharmacol. Exper. Therap., 49*:36 (1933).
11. Emerson, G. A., and Morrison, J. L.: *J. Pharmacol. Exper. Therap., 75*:226 (1942).

1956 INSTITUTES

UNIVERSITY OF TEXAS

UNIVERSITY OF CHICAGO

HOSPITAL PHARMACISTS from all part of the country will have an opportunity to participate in one of the two Institutes scheduled during 1956. The first one will be held at the University of Texas, Austin, Texas, during the week of June 18. The second Institute is scheduled at the University of Chicago, Chicago, Illinois, August 20-24. Announcement and registration forms have been sent to all members of the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS as well as to hospital administrators. Registration for the Institutes is handled through the American Hospital Association and applications are accepted in the order received. In accordance with the policy for setting up this type of meeting, the number of registrants is necessarily limited.

In each instance—Texas and Chicago—housing facilities will be available in dormitories at the Universities. Meals will be served in the University cafeterias and arrangements for both can be made when your application form is returned to the American Hospital Association.

Main Building,
University of Texas

Again, for the eleventh consecutive year, the American Hospital Association in cooperation with the American Pharmaceutical Association and the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS will sponsor the Institutes. In both cases, the local hospital organizations and the ASHP affiliated chapter in each area are assisting in arranging local plans.

Although the 1956 Institutes will follow the same general pattern, an attempt has been made to plan the programs to meet the needs in the particular areas. Emphasis will be placed on new concepts in hospital pharmacy practice and modern trends in therapeutics. There will be a number of opportunities for group discussions and individual participation. The workshop will be conducted and individuals will be given an opportunity to participate in the group discussion of their choice. Among the various sessions will be one on ethical problems in hospital pharmacy, one on the pharmacy and therapeutics committee, one on drug charges, and one on policies and practices in purchasing.

Highlighting the Institute at both Austin and Chicago will be a session on radioisotopes. Leading clinicians from medical centers in the areas will cover the diagnostic and therapeutic uses of radioisotopes, applications, and handling. In both instances, Mr. Paul Parker, Chief Pharmacist at University of Chicago Clinics, Chicago, Illinois will coordinate this session.

Program

Beginning on Monday, discussions will cover the total hospital organization, the role of the pharmacist in the institution, and the philosophical considerations inherent in the concept of a profession. The relationship of the pharmacist to the administration and the effect of trends in hospital care on trends in hospital pharmacy will be emphasized. Speakers will also stress the efforts of all groups to improve patient care and point up the part of the pharmacist as a member of the hospital team.

This will be followed by pointing out the expanding opportunities for pharmacy service in the hospital and lectures covering the various phases will be presented. Of particular interest will be talks on effective communication as an important point in working with the hospital staff and particularly the committees including the Pharmacy-Nursing Committee and the Pharmacy and Therapeutics Committee.

Sessions on the work of the Pharmacy and Therapeutics Committee have been developed with chief

Burton-Judson Court, residence hall at University of Chicago.

consideration being given to policy, procedures, and operation. Dramatization of an actual meeting of a Pharmacy and Therapeutics Committee will give the enrollee first-hand information on this important activity.

Recent trends in drug therapy will be covered by leading pharmacologists and there will be sessions on handling investigational drugs and on the American Medical Association's program for acceptance of new drugs.

Included also on the five-day program will be papers on compounding, packaging, and dispensing, the preparation of ophthalmic solutions, surveying the pharmacy literature, and pharmacy in the hospital accreditation picture.

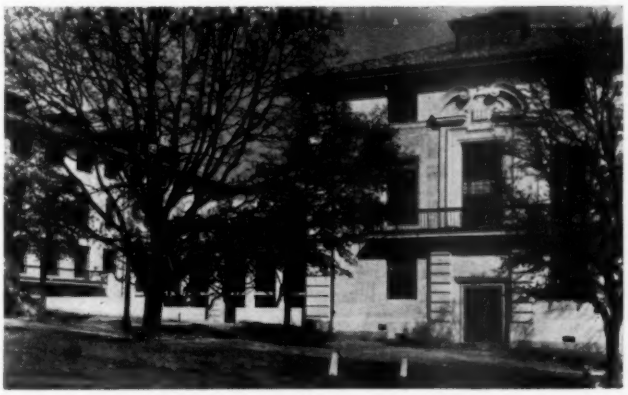
Local Committees

Members of the Texas Society of Hospital Pharmacists are taking the leading role in making special arrangements for Institute enrollees. During the social hour on Monday evening, the Texas Society will sponsor a boat ride and barbecue which will offer an unusual opportunity for relaxation and entertainment. Also, the Houston Area Society of Hospital Pharmacists is arranging for a tour of hospitals in the Houston area on Saturday, June 23. Actively participating in making arrangements for the Institutes are Mr. Charles Henry, Baylor Medical Center, Dallas, Texas; Mr. Cedric Jeffers; Scott and White Hospital, Temple, Texas, Miss Louise Pope, University of Arkansas Hospital, Little Rock, Arkansas; and Miss Adela Schneider, Southern Pacific Hospital, Houston, Texas. Also, Mr. Joe Arnett of the Extension Division of the School of Pharmacy at the University of Texas, is coordinating activities with the University. The Texas Hospital Association has also been active in promoting the Institute.

In Chicago, the Illinois Society of Hospital Pharmacists will assist in making local arrangements. Hospital pharmacists helping to coordinate the programs, include Mr. Paul Parker, University of Chicago Clinics, Chicago, Illinois; Mr. Edward Hartshorn, Evanston Hospital, Evanston, Illinois; and Mr. Louis Cook, St. Joseph's Hospital, Chicago. Mr. Leo Godley, Bronson Methodist Hospital, Kalamazoo, Michigan, assisted in planning the institute programs as Chairman of the Society's Committee on Program and Public Relations.

We regret that the complete program and faculty for the two Institutes are not available in time for publication in The Bulletin. However, a summary of the day-to-day activities will be included with the registration forms, and enrollees will receive a copy of the complete program at the opening of the Institutes.

Pharmacy Building, University of Texas



Batts Hall, University of Texas

Auditorium, Batts Hall, University of Texas

EIGHTH ANNUAL

Texas Seminar

by JEAN WATSON SHEFFIELD

THE EIGHTH ANNUAL Hospital Pharmacy Seminar was held in Austin at the University of Texas College of Pharmacy, February 11 and 12. Sixty-nine registrants participated in the two-day meeting. It was conducted by the University of Texas College of Pharmacy and Division of Extension in cooperation with the Texas Society of Hospital Pharmacists.

Mr. Claude Busick, President of the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS, opened the first session with a discussion of "The Relationship of the T.S.H.P. to the ASHP." He complimented the group for the contributions it has made to the national SOCIETY and stated that the Texas Seminars have set an example for other societies.

Also speaking at the opening session of the Seminar was Mr. Burns Geiger, Director of Hospital Sales and Promotion for Pfizer Laboratories, Brooklyn, N. Y. Mr. Geiger gave his ideas concerning the "Relationship Between Pharmaceutical Industry and Hospital Pharmacy." He said that the two are mutually interested and should work as a team with a common goal in mind. "It is advisable for the sales representative to meet the staff of the hospital and work in accordance with the rules set up by the hospital pharmacists and hospital staff," Mr. Geiger stated. His speech was followed by a panel on "Detailmen and Hospital Displays," with Lewis Smith, Chief Pharmacist, Baylor Hospital, Dallas, serving as moderator.

The Saturday afternoon session was opened by Mrs. Esther Jane Wood Hall, Assistant Professor of Pharmacy Administration at the University of Texas. She spoke to the group on "Fundamentals of Administration." Mrs. Hall stressed that "hospital personnel understanding in a changing economic, technological and social environment is fundamental to successful hospital administration."

ASHP President Busick presents the gavel to Louise Pope, representing Paul Hudson, President of the Texas Society.

Following Mrs. Hall, Fred Borth told the group of some "Extemporaneous Preparations" prepared in his pharmacy. He gave the formula and directions for making aspirin suppositories, a skin lotion, and an effervescent carbonated capsule to be used in x-ray work. Mr. Borth is Chief Pharmacist at Seton Hospital in Austin.

Guy Dalrymple, Administrator of Baptist Memorial Hospital in Beaumont, spoke to the group on "Hospital Accounting." Mr. Dalrymple divided hospitals into two classifications: (1) profit—owned by people who expect to make a profit (shareholders) and (2) non-profit—no stockholders. He stated that a non-profit hospital need not furnish all facilities to the patient without charge, and that the patients who are able, should pay.

The session was closed with a panel discussion of the "Application of Fundamentals of Administration of the Hospital Pharmacy." This panel was moderated by Louise Pope, University Hospital, Little Rock, Ark. The scientific section of the seminar began Sunday morning with a speech by Dr. J. V. Irons, who is the Director of Texas State Laboratories in Austin. Dr. Irons told the group of "Recent Advances in Virology," using slides to show methods used in identifying viruses. He said that most viruses are cultivated in the embryonic egg, but an important exception is polio. It is now possible to cultivate all three of the polio viruses in the mouse.

"Adrenocortical Steroid Therapy" was the subject discussed by Dr. H. Renfert, Jr. of Austin. He told the group of the effects of such therapy, the major and minor side effects and the uses of the adrenocortical drugs. He illustrated his talk by having some of his patients present. He stressed the fact that physiotherapy, rest and salicylates should always be tried before using adrenocortical therapy.

Following Dr. Renfert was Dr. Charles Schwartz, Professor of Pharmaceutical Chemistry, Southwestern State College, Weatherford, Okla. He discussed "The Hypotensive Drugs," listing the drugs now used and some of their more common side effects.

CONTINUED ON PAGE 157

Internships and Graduate Study Programs in Hospital Pharmacy

Several internships in hospital pharmacy, with and without concurrent graduate study, are open to recent graduates in pharmacy. In addition, graduate study in hospital pharmacy is offered by at least three colleges of pharmacy. These latter programs are intended especially for those who have either served an internship or have had several years of experience in hospital pharmacy.

The following is a list of the institutions offering training and/or graduate study in hospital pharmacy. A more detailed description of the training offered at some of these institutions was published in the May-June 1955 issue of THE BULLETIN. Prospective students who desire specific information concerning the various programs should write directly to the Chief Pharmacist of the hospital or to the Dean of the college of pharmacy mentioned.

I. HOSPITAL PHARMACY INTERNSHIPS COMBINED WITH GRADUATE WORK IN AN ACCREDITED SCHOOL OF PHARMACY.

CALIFORNIA

1. The University of California College of Pharmacy, San Francisco, and the University of California Hospital (Medical Center, 3rd and Parnassus Avenues, San Francisco 22, California).
2. University of Southern California College of Pharmacy, Los Angeles and the Veterans Administration Center, Los Angeles.

CONNECTICUT

3. The University of Connecticut College of Pharmacy (Storrs) and the Hartford Hospital (Hartford).

ILLINOIS

4. University of Illinois College of Pharmacy and the University of Illinois Research and Educational Hospital, 1819 West Polk St., Chicago 12.

IOWA

5. State University of Iowa College of Pharmacy, Iowa City and the State University of Iowa Hospital, Iowa City.

MARYLAND

6. University of Maryland College of Pharmacy, Baltimore and The Johns Hopkins Hospital, Baltimore.

MASSACHUSETTS

7. Massachusetts College of Pharmacy, Boston and the Massachusetts General Hospital, together with the Peter Bent Brigham Hospital, Boston.

MICHIGAN

8. University of Michigan College of Pharmacy, Ann Arbor and the University Hospital, Ann Arbor.

NEBRASKA

9. University of Nebraska College of Pharmacy, Lincoln and the Lincoln General Hospital and the Bryan Memorial Hospital, Lincoln.

NEW YORK

10. University of Buffalo College of Pharmacy and the VA Hospital, Buffalo.

PENNSYLVANIA

11. Philadelphia College of Pharmacy and Science in cooperation with Jefferson Medical College Hospital and Jefferson Medical College.
12. Temple University School of Pharmacy, Philadelphia and Temple University Hospital.

TEXAS

13. University of Houston College of Pharmacy, Houston and the VA Hospital in Houston.

14. University of Texas College of Pharmacy, Austin and the University of Texas Student Health Center, Austin.

VIRGINIA

15. The Medical College of Virginia, Richmond and the Hospital Division of the Medical College of Virginia, Richmond.

II. GRADUATE WORK IN AN ACCREDITED SCHOOL NOT HAVING AN INTERNSHIP PROGRAM

INDIANA

1. Purdue University College of Pharmacy, Lafayette.

PENNSYLVANIA

2. University of Pittsburgh College of Pharmacy, Pittsburgh.

TENNESSEE

3. The University of Tennessee College of Pharmacy, Memphis.

III. INSTITUTIONS OFFERING AN INTERNSHIP IN HOSPITAL PHARMACY NOT COMBINED WITH GRADUATE WORK

CALIFORNIA

1. Queen of Angels Hospital, Los Angeles. Chief Pharmacist, Sister Mary Junilla Haskell.

COLORADO

2. Denver General Hospital, Denver. Chief Pharmacist, Mr. Samuel Kohan.

CONNECTICUT

3. Greenwich Hospital, Greenwich. Chief Pharmacist, Mr. Frank J. Steele.
4. Hartford Hospital, Hartford. Chief Pharmacist, Mr. John Webb.

DELAWARE

5. The Delaware Hospital, Wilmington. Chief Pharmacist, Mr. Robert Cathcart.
6. The Memorial Hospital, Wilmington. Chief Pharmacist, Mr. Robert Simons.

DISTRICT OF COLUMBIA

7. Freedmen's Hospital, Washington. Chief Pharmacist, Dr. John S. Mitchell.
8. United States Public Health Service Hospitals (Baltimore, Maryland; New Orleans, Louisiana; and Seattle, Washington). Pharmacist Director George F. Archambault, U. S. Public Health Service, Washington, D.C.

FLORIDA

9. Jackson Memorial Hospital, Miami. Chief Pharmacist, Mr. Carl Dell.

MISSOURI

10. St. Mary's Hospital, St. Louis. Chief Pharmacist, Sister Mary Berenice.

MICHIGAN

11. Saginaw General Hospital, Saginaw. Chief Pharmacist, Jennie M. Banning.

MINNESOTA

12. University of Minnesota Hospitals, Minneapolis. Chief Pharmacist, Miss Hallie Bruce.

NEW JERSEY

13. Atlantic City Hospital, Atlantic City. Chief Pharmacist, Miss Edith Schofield.
14. Hackensack Hospital, Hackensack.
15. Mountainside Hospital, Montclair. Chief Pharmacist, Anna C. Richards.

NEW YORK

16. St. Clare's Hospital, 415 W. 51st Street, New York, N.Y. Chief Pharmacist, Sister Mary Donatus.
17. St. Mary's Hospital, Brooklyn 13. Chief Pharmacist, Sister M. Etheldreda.

NORTH CAROLINA

18. Duke Hospital, Durham. Chief Pharmacist, Mr. I. T. Reamer.

OHIO

19. Mercy Hospital, Toledo. Chief Pharmacist, Sister Mary John.
20. Springfield City Hospital, Springfield. Chief Pharmacist, Mr. Walter M. Frazier.
21. St. Luke's Hospital, Cleveland. Director of Pharmacy Service, Mrs. Evlyn Scott.

OREGON

22. Good Samaritan Hospital. Portland. Chief Pharmacist, Mr. Frank W. Hollister.

PHILADELPHIA

23. Philadelphia General Hospital, Philadelphia. Chief Pharmacist, Mr. Benjamin Wexlar.

TENNESSEE

24. John Gaston Hospital, Memphis. Chief Pharmacist, Mr. J. R. Sykes.

WISCONSIN

25. Madison General Hospital, Madison. Chief Pharmacist, Mr. Richard G. Henry.

therapeutic trends

edited by WILLIAM JOHNSON

Two Drug Potentiating Agents

The duration of action of a number of drugs with widely different structures and pharmacological effects is prolonged by *beta*-diethylaminoethyl diphenylpropylacetate hydrochloride (SKF 525-A), which acts by inhibiting their rate of inactivation *in vivo*. H. M. Lee and his associates have recently observed that 2,4-dichloro-6-phenylphenoxyethyl diethylamine hydrobromide (Lilly 18947), a compound virtually devoid of sedative activity, also prolongs the hypnotic action of hexobarbital in mice.

In the *J. Pharmacol. Exp. Therap. 115*:68 (Sept.) 1955, Fouts and Brodie did experimental work using mice and *in vitro* methods of investigation. It was found that Lilly 18947, in doses devoid of sedative activity, prolongs the hypnotic activity of hexobarbital in mice by inhibiting its rate of biotransformation. Lilly 18947 inhibits enzyme systems present in liver microsomes which oxidize the sidechain of hexobarbital, dealkylate aminopyrine, deaminate amphetamine, cleave the ether linkage of codeine, hydroxylate acetanilid, and conjugate morphine. These biochemical pathways are also blocked by SKF 525-A and SKF acid. It is probable that, despite their dissimilarity in structure, Lilly 18947 and the SKF compounds act by a similar mechanism. Lilly 18947 was supplied by Eli Lilly and Company and the SKF 525-A was supplied by Smith, Kline, and French Laboratories.

Pentaerythritol Chloral—Hypnotic and Sedative

Pentaerythritol chloral is a derivative of chloral hydrate and pentaerythritol. It was tested clinically in a series of 108 ward patients which included persons of all age groups and all were under treatment for organic or functional physical or mental disorders, or chronic alcoholism. The hypnotic dose for adults ranged from 0.5 to 1.0 Gm., and for children, from 0.3 to 0.6 Gm. Medication was continued nightly for periods of two weeks. The dose was repeated in two or three hours if required; in all but three instances one dose was sufficient. Other types of hypnotics and sedatives were used in a control group to determine the effectiveness of pentaerythritol. With pentaerythritol chloral, an average of two hours more sleep was obtained with one-quarter to one-half the usual dose of chloral hydrate, and the disadvantages of both chloral hydrate and the barbiturates were avoided. Hypnotic action was more rapid than that produced by various dosage forms of chloral hydrate.

Pentaerythritol chloral was given to a series of patients for performance of encephalographic studies. Sleep was obtained in 15 to 20 minutes, was more natural than in controls, permitted rapid interruption without after-effects, and the EEG tracings showed no apparent "dampening." Controls for this study received barbiturates or chloral hydrate. The controls, on awakening, were drowsy and poorly coordinated, and a "dampening" effect was noted on the sleep records. One hundred patients who received 0.3 Gm. pentaerythritol chloral every four to six hours for daytime sedation were satisfactorily relaxed but not drowsy. This study was reported by Gatski in *Am. Practitioner and Dig. Treatment. 6*:1855 (December) 1955.

Mecamylamine—A Hypotensive Agent

Mecamylamine (3-methylaminoisocamphane) is a secondary amine. It is the first known ganglionic blocking agent which is completely absorbed after oral administration. The hemodynamic effects have been studied both in the laboratory as well as in patients with hypertension. Mecamylamine produced the same cardiovascular and renal hemodynamic effects on dogs as have been previously observed with such autonomic blocking agents as hexamethonium and pentolinium. When given to patients with hypertension, it produced a consistent reduction in blood pressure which was most marked in the upright position. The effect was about equivalent when given orally as when given parenterally, the average daily dose being approximately 19 mg. The onset of action ranged from ½ to 2 hours, and lasted 12 to 48 hours. The response was quite variable from patient to patient, but within the same patient, it was reproducible,

thus minimizing one of the chief objections to ganglionic blocking agents for the treatment of hypertension.

The most annoying side effects with mecamylamine were constipation, weakness, and dizziness. Constipation was not marked in most cases but it is a serious side effect and should be treated actively with cathartics. After continued therapy for several weeks, constipation either lessens or disappears in most patients. Weakness was present in 38 percent of a group treated. In most patients, this was not marked and hard to evaluate. Dizziness was present in 40 percent of the group treated at some time during the course of therapy. Comparison of the side effects of therapy with mecamylamine and two other ganglionic blocking agents reveals that the major side effects of ganglionic blockade are qualitatively comparable with the three drugs. This work was reported by Moyer, Ford, Dennis, and Handley in *Proc. Soc. Exptl. Biol. Med. 90*:402 (November) 1955.

Diphenylpyraline—A New Antihistaminic Drug

This clinical investigation of diphenylpyraline, a new antihistaminic drug, reveals a high degree of effectiveness, with a practically negligible incidence of side effects. The superiority of one antihistamine over others is dependent not solely upon its potency, but upon its effectiveness without intolerable side reactions.

Nachtigall evaluated diphenylpyraline clinically in 121 patients with allergic disorders and reported the following in *J. Allergy 27*:75 (January) 1956. Seventy-one percent of the patients experienced excellent to moderate relief of allergic symptoms with diphenylpyraline. The extreme effective dosage range was 4 to 8 mg. in divided doses daily. The optimum dosage was 2 mg. three times a day. Overall side effects occurred in only 3.3 percent of the patients tested, one of whom had the same side effects with placebo therapy. Extremely satisfactory results were obtained in the cases of both seasonal and perennial allergic rhinitis tested with diphenylpyraline with excellent to moderate relief of symptoms.

Dangers in Combining Reserpine with Electroconvulsive Therapy

Foster and Gayle report in *J. Am. Med. Assoc. 159*:1520 (December)17) 1955 dangers that may attend the combination of reserpine with electroconvulsive therapy. Severe reactions, including one fatality, have been observed in 6 of a total of 63 patients receiving a combination of reserpine and electroconvulsive treatment. There was no correlation between either the amount or the route of administration of reserpine and the severity of the reaction. Minimal convulsive dosage was employed with the electroconvulsive apparatus. Complete clinical and laboratory studies of the patients, both before and after the critical treatments, did not show adequate or predictable causes for the untoward effects in these particular patients. In an addendum, the authors state that since this article was written they have found evidence indicating that a minimum of seven days should elapse after reserpine therapy before the initiation of electroconvulsive treatment.

Tritheon—Orally Effective Trichomonacide

Tritheon is 2-acetylamine-5-nitrothiazole and a study of its trichomonacidal activity is reported by Plentl *et al.* in *Am. J. Obstet. Gynecol. 71*:116 (January) 1956. Routine examination of vaginal smears by the culture method of Kupferberg, Johnson, and Sprince showed that 31.6 percent of gynecologic patients harbored *Trichomonas vaginalis*. Twenty percent of pregnant patients were found to be infected when the same diagnostic technique was used. About 60 percent of these patients had symptoms attributable to the disease. Tritheon was shown to be effective when administered orally. The parasites were eradicated in 35 percent of infected patients regardless of presence or absence of symptoms when the drug was administered in daily doses of 300 mg. as enteric coated tablets for a period of seven to ten days. With dosages exceeding 450 mg. per day, side reactions such as anorexia, abdominal cramps, nausea, and dark discoloration of the urine became pronounced without a corresponding rise in the parasitologic cure rate. There was no demonstrable change in the hemograms of these patients during and after therapy.

Etosalicil—A New Salicylic Derivative

As noted in an abstract in *J. Am. Med. Assoc. 159*:1332 (November 26) 1955, Ducco, Vercelli, and Strobbia report the results of studies on the metabolism of a new salicylic derivative, ortho-ethoxy-benzamide ("Etosalicil" or ethyl-salicylamide), which has the advantages over the other known salicylic derivatives of being less toxic, having a greater antirheumatic, antipyretic, and analgesic activity, and is better tolerated by patients. Metabolism studies indicated that while salicylic acid is eliminated as such by the kidney, and salicylamide is excreted as glucuronide and sulfuric ether or gentisates, about 50 percent of the new derivative is eliminated as soluble compounds of salicylamide (30 percent) and as ortho-ethoxy-benzoic acid (20 percent). Absence of carboxyls (acids) or free phenolic groups accounts for the complete absence of gastric disturbances during the administration of the drug and for its lesser toxicity.

timely drugs

Achrocidin

. . . is a new preparation combining the broad spectrum antibiotic Achromycin (tetracycline) with an antihistamine and an analgesic compound. It is indicated in the control of secondary infections and the relief of symptoms associated with the common cold. Achrocidin is a product of Lederle Laboratories Division, American Cyanamid Company.

Achrocidin controls most bacterial invasions and relieves such symptoms of the common cold as headache, muscular aches and pains, fever, nasal discharge, excessive mucous and chest congestion. Each tablet contains Achromycin hydrochloride, 125 mg.; phenacetin, 120 mg.; caffeine, 30 mg.; salicylamide, 150 mg.; and Chlorothen citrate, 25 mg.

The recommended dosage of Achrocidin is two tablets with a full glass of water or a bland drink at the onset of symptoms, followed by two tablets three to four times daily for three to five days. In addition, the usual measures such as bed rest, increased fluid intake and precautions against exposure to cold and inclement weather should be followed.

Azo Gantrisin

. . . is a new antibacterial-analgesic for urinary tract infections. It is supplied by Hoffmann-La Roche, Inc. Each tablet provides 500 mg. of Gantrisin for wide-spectrum antibacterial action—in the blood as well as the urine—together with 50 mg. of phenylazo-diaminopyridine hydrochloride for relief of local pain and discomfort.

Gantrisin provides both high urinary and high plasma concentrations; this is important because the majority of urinary tract infections appear to be carried to the kidney by the blood stream. In addition, the high solubility of Gantrisin, even in acid urine, virtually eliminates the danger of renal blocking.

The soothing effect of phenylazo-diamino-pyridine hydrochloride on inflamed mucous membranes of the urinary tract usually brings prompt relief of dysuria, burning and frequency. The recommended dosage of Azo Gantrisin is two tablets four times daily, or as directed.

Cytoferin Tablets

. . . is a combination of ferrous sulfate exsiccated, 200 mg., and vitamin C, 150 mg. A product of Ayerst Laboratories, Cytoferin tablets are indicated in the treatment of hypochromic microcytic anemia.

Deca-Mulcin and Deca-Vi-Caps

. . . are two new vitamin products available from Mead Johnson and Company. These preparations along with Deca-Vi-Sol form the Mead Deca family—three preparations having the same basic formulation, but in different dosage forms. The Deca family, each member of which contains ten biologically significant vitamins, is designed specifically for the vital first decade of life, hence the prefix Deca. Each offers vitamins A, D, C, thiamine, riboflavin, niacinamide, pyridoxine, B_{12}, panthenol and biotin, plus the same high level of protection and the same high quality, hypoallergenicity, and stability.

Deca-Mulcin is a delicious, orange-tasting liquid for teaspoon dosage to pre-schoolers who have "graduated" from the drop form found in Deca-Vi-Sol. The same formulation is available in capsule form for school-age children—six to ten—in the other newcomer, Deca-Vi-Caps.

Flexin

. . . the first orally effective drug for the relief of muscle spasm in musculoskeletal and neurological disorders, has been developed by McNeil Laboratories, Inc. Unrelated to any available agents, it has never before been synthesized. The generic name is zoxazolamine and it is discredited as a "lissive" agent. That is, it eliminates skeletal muscle spasm without interfering with normal muscle power or activity.

Flexin is indicated for conditions whenever musculoskeletal spasm is present, such as low back pain, fibrositis, spondylitis and rheumatoid arthritis. It has also been found useful as an adjunct in the treatment of neurological disorders such as spinal spasticity states, cerebral palsy, multiple sclerosis, cerebral vascular accidents and Parkinson's disease.

Marked freedom from side effects has been observed in many patients, some of whom have undergone daily therapy for as long as twelve months. Moreover, the duration of action—approximately six hours—and the ease of maintenance dosage are emphasized.

Natalins-PF

. . . is a phosphorus-free vitamin-mineral capsule for use in pregnancy. It contains a balanced range of nutrients, including vitamins A, D, C, B_1, B_2, B_6, B_{12}, niacinamide, calcium pantothenate, folic acid, ferrous sulfate, and calcium carbonate.

Natalins-PF, a product of Mead Johnson and Company, is a companion product to Mead's other prenatal products. It gives Mead Johnson a complete range of protective nutritional capsules for use in pregnancy—Natalins for the average patient, Natalins-T for the anemic patient, and Natalins-PF, for the patient who should not have phosphorus.

Neosporin Ophthalmic Solution

. . . is a combination of polymyxin B sulfate, 5,000 units, neomycin sulfate, 2.5 mg.; and gramicidin, 0.025 mg. Neosporin ophthal-

mic solution, indicated in eye infections, is a product of Burroughs Wellcome and Company.

Pathilon

. . . (iodide tridihexethyl iodide) in now available in a new parenteral dosage form. It is an anticholinergic agent which relieves pain from peptic ulcer with a minimum of side reactions. Pathilon is a product of Lederle Laboratories.

The parenteral form of Pathilon may be administered intravenously, intramuscularly or subcutaneously where oral forms of Pathilon are impractical or where a more rapid response is desired. Ten to twenty mg. every six hours is the recommended dosage.

Pediatric Abbo-Liter Containers

. . . Eight Abbott intravenous solutions are now available in a new 150 ml. Abbo-Liter container for pediatric use. The new Abbo-Liter is molded with 10 ml. graduations for rapid determination of quantity administered. Space has been provided on the label for patient name and directions by the prescribing physician.

The following Abbott solutions are now available in 150 ml. Abbo-Liters, in addition to the regular 250 ml. and 500 ml. sizes: Dextrose 2½ percent in Water; Dextrose 5 percent in Water; Ionosol PSL; Isotonic Sodium Chloride; Sodium Lactate ⅙ Molar; Dextrose 2½ percent in ½ Strength Lactated Ringer's; Dextrose 2½ percent in ½ Strength Ringer's Solution; and Dextrose 2½ percent in ½ Strength Saline.

Raucylate Capsules

. . . offer a new formulation to relieve pain and to allay the tension of painful conditions. The combination contains *Rauwolfia serpentina* (whole powdered root), acetylsalicylic acid, aluminum hydroxide dried gel, and ascorbic acid. Raucylate, a product of Flint, Eaton and Company, is indicated in arthritis, in rheumatic joint and many other acute and chronic painful states, for the alleviation of pain and freedom of apprehension. The dosage is one or two capsules three or four times daily, as required. Children should receive correspondingly less.

Reserpoid Elixir

. . . is a port-wine colored liquid containing 0.25 mg. of reserpine in each 5 ml., with 14 percent alcohol. Reserpoid elixir is used as an antihypertensive agent with nonhypnotic tranquilizing action. It is administered orally, the dosage varying considerably for different conditions. Reserpoid elixir is a product of the Upjohn Company.

Sterane

. . . is being marketed in a new dosage form by Pfizer Laboratories. The new, pink, scored, oval-shaped tablet contains 1 mg. of prednisolone. It was formerly available in 5 mg. tablets only.

Sterane is indicated in the treatment of rheumatoid arthritis, hay fever, bronchial asthma, ulcerative colitis, lupus erythematosus, pemphigus, scleroderma and other allied allergic and collagen diseases.

In clinical studies, the initial suppressive dose for rheumatoid arthritis averaged 30 mg. daily and the maintenance dose ranged from 5 mg. to 20 mg., considerably less than the required hydrocortisone maintenance dosage.

Synatan

. . . is the first commercially available tanphetamin protocolloid complex which provides for gradual and even release of amphetamine as it passes along the gastrointestinal tract. Sustained amphetamine release is an inherent property of the molecular complex itself and is completely independent of any particular gastrointestinal *p*H or of coatings of any kind. A single dose of Synatan produces an extended uniform therapeutic effect which lasts throughout the day. When administered in the morning, Synatan produces a therapeutic response which continues for from 10 to 12 hours. Therapy is certain and dependable. The patient will not experience "peak and valley" activity. The usual therapeutic dose is two Synatan tabules taken at 10 A.M.

The Synatan tabule is composed of a protocolloidal complex containing tanphetamin (dextro-amphetamine tannate) 17.5 mg., equivalent to 5.25 mg. of amphetamine base. Synatan is a product of Irwin, Neisler & Company, Decatur, Ill.

Syrup Calcidrine

. . . Abbott's Calcium Iodide Syrup and Ephedrine Compound with Dihydrocodeinone, is an improved formula with a new apricot flavor and color, highly acceptable and effective for cough due to colds. Each 30 ml. contains: dihydrocodeinone bitartrate, 10 mg.; Nembutal sodium, 25 mg.; ephedrine hydrochloride, 25 mg.; and calcium iodide, anhydrous, 910 mg. in a palatable aromatic syrup.

Syrup Calcidrine is indicated as a mucous liquefying agent, antispasmodic, sedative and an inhibitory to the cough reflex in cough due to colds.

Thorazine Suppositories

. . . have been introduced by Smith, Kline and French Laboratories in two sizes—25 mg. (children's size) and 100 mg. (adult size). The suppositories are primarily designed for the control of nausea and vomiting when oral doses cannot be retained or when repeated injections by the physician are not practicable. Thorazine suppositories are also useful in other conditions in which rectal administration of the drug may be desired.

Tridal

. . . for the relief of pain and spasm throughout the gastrointestinal tract, has been released by Lakeside Laboratories. It is a combination of Dactil and Piptal. Tridal is indicated for patients with complaints of a functional nature throughout the G.I. tract.

Viterra Tastitabs

. . . are fruit-flavored, soluble multi-vitamin mineral tablets available from J. B. Roerig, Division of Chas. Pfizer and Company. Tastitabs are designed as a diet supplement for infants, children, adults and elderly persons. They contain vitamins A, D, C, B_1, B_2, pyridoxine, niacinamide, calcium pantothenate, B_{12}, iron, cobalt, copper, iodine, potassium molybdenum, manganese, magnesium and zinc.

Viterra Tastitabs have a palate-pleasing cherry flavor, without a gritty or metallic after-taste. They may be stored without refrigeration. The dosage is one aspirin-size tablet daily, or as directed by physician.

CURRENT LITERATURE

edited by SISTER MARY ETHELDREDA, *St. Mary's Hospital, Brooklyn, N.Y.*

American Professional Pharmacist

LANTOS, ROBERT: Dispensing and Labeling in Hospital Pharmacies, *Am. Profess. Pharmacist 22*:56 (Jan.) 1956.

Discusses variations in simplification of dispensing methods with emphasis on safety to patients and adequate communication to nurses as to exact contents and methods of use.

ZUGICH, JOHN J.: From the Editors Scratch Pad. *Am. Profess. Pharmacist 22*:146 (Feb.) 1956.

Activities of national importance and implication for the future of the profession and affecting both hospital and retail pharmacy are presented.

Hospital Management

MORAVEC, DANIEL F.: Measuring Stick for the Department of Pharmacy, *Hosp. Management 81*:92 (Feb) 1956.

Information essential for the administrator as compiled through reports that indicate the progress and activity of the department are described.

HUNTER, JAMES A.: Hospital Medication Injection Costs, *Hosp. Management 81*:82 (March) 1956.

Part I of a preliminary quantitative study of the costs involved when medications are injected by the conventional syringe method and the costs involved when the disposable syringe method is used.

Hospital Progress

SISTER M. BERENICE: Pharmacy Internships, *Hosp. Progress 37*:70 (Feb.) 1956.

A discussion of the newer methods which have replaced the older unstandardized training and experience programs.

The Hospital Pharmacist (Canada)

FRASER, M.A.M.: Better Relationship Between the Hospital Pharmacy and the Hospital Accounting Department. I—As Administration Views the Situation, *Hosp. Pharm. (Canada) 9*:19 (Jan.-Feb.) 1956.

First of a series of three papers presented as a panel at the 1955 Canadian Institute on Hospital Pharmacy. Here, the importance of good relationships between the pharmacy and accounting service, are emphasized.

FLADGATE, S.R.G.: II—Do's and Don'ts By the Accounting Department, *Hosp. Pharm. (Canada) 9*:20 (Jan.-Feb.) 1956.

Second in the series of papers on relationships between the hospital pharmacy and the hospital accounting department. The functions of each department are discussed.

COOK, J.F.: III—As the Pharmacy Department Sees It, *Hosp. Pharm. (Canada) 9*:22 (Jan.-Feb.) 1956.

Third in the series mentioned above. Covers methods of control, hospitalization coverage, and purchase of drugs.

WHITTET, T. D.: Research Into the History of a Pharmaceutical Department, *Hosp. Pharm. (Canada) 9*:39 (Jan.-Feb.) 1956.

The author is Chief Pharmacist at University College Hospital, London, as well as a member of the teaching staff of the faculty of medicine and the faculty of Medicine at University of London. Here, he presents further background on the historical aspects of the Pharmacy Department at University College Hospital with particular reference to his predecessors.

WALKER, G. C.: Equipment for Manufacturing Pharmacy, Part II, *Hosp. Pharm. (Canada) 9*:43 (Jan.-Feb.) 1956.

Lists equipment, sources, comments, and uses of specialized equipment used in manufacturing in a hospital pharmacy.

Hospitals

PIKE, MAXWELL: Our Pharmacy Produces Its Own Solutions, *Hospitals 30*:60 (Feb.) 1956.

Explains how a hospital pharmacist, central supply supervisor and a technician maintain a sterile solution program in a 214 bed hospital.

The Modern Hospital

CAMP, W. J. R.: Common Causes of Household Poisoning, *Modern Hosp., 86*:106 (Feb.) 1956.

A report on the common toxic substances found in every home and recommendations for overcoming the hazards.

J. Am. Pharm. Assoc., Pract. Pharm. Ed.

ESCABI, R. S. *and* DEKAY, H.G.: New Developments in Calamine Lotion, *J. Am. Pharm. Assoc., Pract. Pharm. Ed. 17*:30 (Jan.) 1956.

Methods of stabilizing or improving calamine lotion are considered. Variation of earlier formulas introduced are studied to determine the influence of electrolytes, suspending agents, and pH on the stability of the lotion.

BRAUDE-COLSENET, M. *and* GUTH, E. P.: Prevention of Precipitation in Mixed Liquid Preparations, *J. Am. Pharm. Assoc., Pract. Pharm. Ed. 17*:92 (Feb.) 1956.

An evaluation of the protective value of five agents is reported—polysorbate 20, polyoxyalkalene F 68, polyethylene glycol 400, sodium carboxymethylcellulose, and honey. It was concluded that the first two gave good results. The other agents should not be employed for various reasons.

Southern Hospitals

STROTHER JAMES: Drug Prices and Hospital Insurance, *South. Hosp. 24*:57 (Feb.) 1956.

A discussion of the relation of drug costs in establishing price and rates in hospitalization insurance.

BOOK REVIEWS

REMINGTON'S PRACTICE OF PHARMACY, Eleventh Edition 1956. Edited by Eric W. Martin and E. Fullerton Cook with the assistance of four associate editors and more than 200 contributors and assistant editors. Published by the Mack Publishing Company, Easton, Pa. 8½" x 11½", 1707 pages, over 1000 illustrations, bound in green fabricoid, $17.50.

The eleventh edition of Remington was released in February, 1956, just two months after the U.S.P. XV and N.F. X became official. This is a commendable achievement in view of the fact that the new Remington was revised essentially to conform to the changes made in the official compendia which preceded it in print by not more than six months.

In the preface to the eleventh edition the editors state that "the rapid advances which have occurred in the biological sciences associated with pharmaceutical research, development, and production during the past decade have necessitated the most profound revision of this textbook since the first edition appeared in 1885."

In reviewing a book so well known to practically every American pharmacist, it hardly seems necessary to make mention of its general contents. The scope of, and the general approach to the subject matter remain essentially the same as in past editions. However, only cursory inspection of the text material reveals that there has been at least some rewriting in practically every one of the 100 chapters making up the volume and a considerable amount in the majority of them.

The most noticeable change is the overall rearrangement of topics, chapters, and sections which has led in many cases to consolidation of related but widely scattered topics under fewer and more readily utilized subject headings. Instead of the former fifteen sections, the book is now divided into nine parts. The first five parts, Introduction to Pharmacy, Physical Pharmacy, Preparations of Pharmacy, Inorganic Pharmacy, and Organic Pharmacy, cover the same subject matter which was taken up in the first five parts of the previous edition. Parts VI to IX, Biological Pharmacy, Analytical Pharmacy, Professional Services of Pharmacy, and Appendix, cover the topics which were considered in the last *eight* parts of the tenth edition, evidence of the extent of reorganization of sequence of topics.

Subjects which show evidence of extensive rewriting and expansion of text include chapters on "The Colloidal State,'" "Sterilization," "Parenteral Solutions," and "Tablets, Capsules, and Pills." The latter chapter includes a much enlarged section on the coating of tablets, capsules, and pills with an appended bibliography of 247 references.

The chapter on "Radioactive Elements" has been expanded nearly tenfold and should be of interest to all hospital pharmacists. The chapter on "Hospital Pharmacy" has been completely revised and much enlarged. This is perhaps the most comprehensive discussion of hospital pharmacy in its various aspects which is currently available in any one text or reference book.

New subjects which make their first appearance in Remington in the eleventh edition include "Rheology," the flow properties of matter; "Chromatography," including adsorption, ion-exchange, and partition chromatography; "Physical Properties and Molecular Structure;" and "Veterinary Service." Deleted from this edition are the chapters on "Perfumery" and "Cosmetics." Some of the formulas formerly appearing in these chapters have been added to the appendix in the present edition.

The sequence of chemical groups in Part IV, "Inorganic Pharmacy," has been changed and this section is now arranged so that the elements and compounds and the preparations in which they are used are considered in the order in which the elements appear in the periodic table.

Changes in format which are worthy of note include the use of larger and more prominent type for headings of chapters, sections, and sub-sections. The use of larger type along with a revised system of using double-column sectioning to set off individual topics within the chapters makes it much easier to locate subject headings rapidly.

In keeping with past policy, numerous prescription examples and formulas are interspersed throughout the book. Though most of these are the same ones which appeared in the previous edition, it is interesting to note that the use of Latin titles for the ingredients in these prescriptions has been abandoned. Likewise, archaic spellings of some pharmaceutical terms have been changed to the more acceptable modernized versions, (eg., *dram* in place of *drachm*).

This outstanding reference text owes much of its value to a very comprehensive index which even lists the names of numerous individual specialty items which are described under the appropriate sections.

WARREN E. MCCONNELL
University of Michigan
Ann Arbor, Michigan

THE AMERICAN DRUG INDEX. By Charles O. Wilson, Ph.D. and Tony Everett Jones, M.S. Published by J. B. Lippincott Company, Philadelphia. 1956. 5½" x 8¼", 576 pages. Price $5.00

On of the newest and most useful references for the pharmacist and those in allied professions is The American Drug Index. This volume contains an alphabetical listing of drugs, with extensive cross-indexing, by their generic, trade, and chemical names. Many common synonyms such as Burow's Solution also appear. Brief information is found on many drugs not commercially available.

Data listed for a drug include its generic name, chemical name, manufacturer, pharmaceutical forms, package size, dosage, and use. Proper recognition is given each drug according to the official and/or latest edition of the U.S.P., N.F., N.N.R., or A.D.R. To obtain information on a drug it is only necessary to know the generic, chemical or trade name, or the major ingredient of a preparation. Similarly, it will tell the hospital pharmacist if a drug prescribed by its trade name is available under its generic name or another trade name.

In addition to the listing of drugs, there are some pharmacologic groups such as Antispasmodics, Antidiarrheics, Vasodilators, etc. There are also some groups of related drugs under headings such as Epinephrine-Related Compounds. As a space and time saver, many tables are found throughout the text. These are generally combinations of a given drug, i.e. Acetophenetidin Combinations (3 pages) and Ephedrine Product Combinations (2½ pages), and give the salt if more than one is used commercially, the strength, other ingredients and their amounts, manufacturer, and trade name. Each trade name product is also included in the main text.

Although the book contains approximately 12,000 drug preparations, it cannot possibly keep up with the great number of drugs introduced in the market every week, and it is hoped that the authors will be able to revise the book at comparatively short intervals. Meanwhile, there is probably no other single volume containing such extensive information on drugs in a form so easy and convenient to use as The American Drug Index.

JOANNE BRANSON

REACTIONS WITH DRUG THERAPY. Editor, Harry L. Alexander, M.D. 1955. 301 pages. Published by W. B. Saunders Company, Philadelphia, Pa. Price $7.50.

This book represents a successful attempt to compile a systematic reference on reactions encountered to drugs.

Three chapters are devoted to fundamental information to establish the basic principles involved in the reaction syndrome: (1) mechanisms through which the reaction manifestations occur; then a section on (2) dermatologic manifestations; and (3) systemic patterns.

Following are fourteen chapters on specific therapeutic classifications (anti-infectious drugs, antiarthritic drugs, cardiovascular drugs, sedatives . . .) in which reactions to drug in the particular categories are discussed. Each chapter is followed by a bibliography and there are many photographic illustrations and tables which contribute to usability of the text.

The fifteen page index appears to be adequate in scope and arrangement. This book certainly fills well a long empty area in the pharmacy library.

LEO F. GODLEY

DRUGS IN CURRENT USE 1955. Edited by Walter Modell, M.D., F.A.C.P. Published by Springer Publishing Co., Inc., 44 E. 23rd St., New York 10, N. Y. 5½" x 8", 160 pages. Price $2.00 single copy; $1.80 in quantities.

This "formulary-type" book offers an alphabetical listing of drugs which can serve as a useful supplement to the hospital pharmacist. The listing has been developed from the Materia Medica section of Modell and Place's textbook entitled the Use of Drugs. Other sources used in compiling the listing includes the U.S.P., the N.F., Useful Drugs, N.N.R., Modern Drug Encyclopedia, the Journal of the American Medical Association, and others.

The book is small and compact and presents concise information covering principle pharmacological action of drugs, major uses, physical properties, absorption, actions, and the mode of administration. Also listed are preparations in common use, dosage forms, specific antidotes against poisoning when these are available. There are also listed special warnings about reactions and counter-indications and general information on storage of drugs.

GLORIA NIEMEYER

EPITOME OF THE PHARMACOPEIA AND NATIONAL FORMULARY. Tenth edition, 1955. Issued under the direction and supervision of the Council on Pharmacy and Chemistry of the American Medical Association. 7½" x 5¼", xiii + 322 pages. Published by J. B. Lippincott Co., Philadelphia. Price $3.00.

This is the tenth edition of a book well known to pharmacy students and practitioners. The present edition follows the general plan of the previous editions and includes the drugs currently found in the U.S.P. XV and N.F. X. Descriptions of the official items contain the following information: Official titles, synonyms, brief definitions, concise descriptions of physical properties, actions, uses, and dosage. Adverse comments are made on preparations believed to be of doubtful or of no therapeutic value. These comments are helpful to practicing physicians and pharmacists, and especially to those engaged in Pharmacy and Therapeutics Committee activities. This book is a useful companion volume to *New and Nonofficial Remedies.*

DENTAL PRACTITIONERS' FORMULARY, 1955. 6½" x 4", 35 pages. Published by The British Medical Association, Tavistock Square, London, and The Pharmaceutical Press, 17 Bloomsbury Square, London, W.C. 1 England. Price 2s, 6d (approxiately $0.50 in U. S. currency, including postage).

This dental formulary has been compiled for use by dentists in the (British) National Health Service. Preparations are listed by pharmaceutical classification as follows: capsules 3, poultices 1, mouth washes 4, elixirs 1, gargles 3, glycerins 3, draughts 1, injections 3, solutions 2, mixtures 2, paints 3, solution-tablets 5, tablets 33, and lozenges 4. Short statements of contents, labeling, dosage, and directions for use are included under each preparation. In most monographs the amount of the preparation to be dispensed unless the prescriber directs otherwise is stated.

This book is of general interest to those who may be compiling a dental formulary or a hospital formulary with a dental section in it.

GOOD AS IT IS

TO INHERIT A LIBRARY,

IT IS BETTER

TO COLLECT ONE

—Augustine Burrell

Impressions...

an American pharmacist in Europe

by GLENN SONNEDECKER, *Secretary, American Institute of the History of Pharmacy*

Third in a series of informal columns dispatched to THE BULLETIN by Dr. Sonnedecker during his year in Europe as a Fulbright Research Scholar and Fellow of the Guggenheim Foundation.

The British Society

LIBRARY WORK TAKES ME RATHER OFTEN to "The Square," as British pharmacists affectionately call the staid building at 17 Bloomsbury Square that has housed the Pharmaceutical Society of Great Britain and its school since the founding in 1841. The elegant solidity of Georgian architecture marks the neighborhood, although the town houses are now mostly let as flats and as chambers for professional and business people.

During these weeks the old school of pharmacy, now an integral part of the University of London, has completed the first stage of moving into an excellently designed new building on Brunswick Square. This school, so long mothered by the Society, has held somewhat the same historical and sentimental place in British pharmacy as the Philadelphia College of Pharmacy in America.

The Society itself has long since outgrown its original building, overflowing into five other buildings near The Square. All pharmacists must be members of the Society, permitting a staff nearly four times larger than that of the A.Ph.A. The government gives quasi-official status to the Society, which broadens and at the same time somewhat circumscribes its activities. It holds the full regulatory power, for example, which rests with our state boards of pharmacy. When a pharmacist must be hailed into court for alleged misconduct, it is the barristers of his own Society who argue the case against him on behalf of Her Majesty.

This pharmaceutical self-government and responsibility are impressive. While the government does not ask for an accounting from the Society, three men representing the government do sit on the Society's Council, men usually drawn from health fields allied to pharmacy.

The Society has one of the great pharmaceutical personalities of our time in its senior Secretary, Sir Hugh Linstead (knighted by Queen Elizabeth). His hours have been increasingly occupied by duties as a member of Parliament and as president of the International Pharmaceutical Federation. Hence, the active administration of the Society now largely centers about the quietly competent Secretary F. W. Adams, for many years Sir Hugh's understudy.

Roughly speaking the Society is the British counterpart of the A.Ph.A.; and in the short range view of some pharmacists its emphasis on the professional and scientific standing of pharmacy produces mixed feelings that are not unfamiliar to us. I am not long in hearing from a chemist in a small shop that the Society does little for the "retailer," that it does not understand pharmacy today, that the National Pharmaceutical Union is the *real* organization. This story was a little startling, mainly because substituting "A.Ph.A." and "N.A.R.D." for "Society" and "Union" makes it almost verbatim a story long familiar to American ears.

The Pharmaceutical Union

By its nature and responsibilities the British Society must be concerned with pharmacy as a whole. This leaves a place for the National Pharmaceutical Union (no kin to trade unionism), which vigorously pursues the business interests of pharmacy owners from its own building on Queen Square. All but a few percent of pharmacy owners in England hold voluntary membership.

As far as I can determine, the relations between the Union and the British Society are placid enough, kept on an even keel by a liaison committee and cross representation on executive councils. Their respective spheres of activity have long since been well defined. This difference between pharmacy's circumstance in England and in the U.S.A. seems fundamental and significant.

Some of the Union's activities are: taking care of pharmacists' relations with the National Health (insurance) Service; issuing a news letter, record books, and the like; helping owners dispose of excess drug stocks; providing inventory assistance, insurance protection, and legal assistance; and making loans to young pharmacists to help them become owners.

In the same building with the Pharmaceutical Union, I find the Chemists' (i.e., pharmacists') Federation. It is part of the British effort to encourage proper standards for proprietary drugs and to channel their distribution through professionally supervised establishments. The Federation and its consultants pass upon the formulas and labeling of packaged medicines of participating manufacturers; and I infer that practicing pharmacists are encouraged to give preference to those products that pass muster. In recent years the Federation has given increasing attention to the advertising claims of proprietaries. The advertising—just as in the States—often invites critical attention, a concern that has been fostered in various ways by the Pharmaceutical Society.

The executive council of the Chemists' Federation consists of representatives of pharmacy owners (National Pharmaceutical Union) and of manufacturers participating in the plan. They have an interesting approach to the proprietary question, for which American pharmacy has not yet evolved a counterpart.

ASHP affiliates

Rhode Island Society

The Rhode Island Society of Hospital Pharmacists met for a dinner meeting at Johnson's Hummocks in Providence on January 12, 1956. Dr. Thomas C. Flemming of Hoffmann-La Roche was the principal speaker. He discussed drugs used in the treatment of myasthenia gravis and the talk was supplemented with a film.

Indiana Chapter

The regular quarterly meeting of the Indiana Chapter of the ASHP was held in the Auditorium of the Indiana State Board of Health Building, Indianapolis, on January 21. This was held in conjunction with a joint meeting with the Indiana Branch of the A.Ph.A. and the following program was presented:

"Drugs Used in Mental Illness," by Hans W. Freymuth, M.D., Central State Hospital.

"Stabilities and Shelf Life of Pharmaceuticals," by Dr. Malcolm Bray, Director of Pharmaceutical Research, Eli Lilly Company, Indianapolis.

"Compounding Ophthalmic Solutions," by Kenneth M. Wood, Indiana University Medical Center, Indianapolis.

"Over the Counter Drugs," by Tim Sullivan, Director of Food and Drug Division, Indiana State Board of Health, Indianapolis.

"Seizure," (Movie), Courtesy of Parke, Davis and Company.

"Inter-Professional Relations Panel"—Allen V. R. Beck, Pharmacist, Indiana University Medical Center, Indianapolis, *Moderator*. Participants: Walter M. Frazier, Springfield City Hospital, Springfield, Ohio; Kenneth Wood, Indiana University Medical Center, Indianapolis; Herb Gerding, Retail Pharmacist, Fort Wayne, Ind.; and Dr. Karl Kaufman, Dean, Butler College of Pharmacy, Indianapolis.

The group was welcomed by Dr. A. E. Jarvis, President of the Indianapolis Branch of the A.Ph.A. and Dr. Glen Sperandio, President of the Indiana Chapter of the ASHP, presided over the meeting.

Massachusetts Society

The Massachusetts Society of Hospital Pharmacists held a meeting at 5:30 P.M. at the Hotel Somerset in Boston on January 20. The meeting was held immediately prior to a dinner sponsored by E. R. Squibb and Sons.

Greater Kansas City Association

Members of the Hospital Pharmacists' Association of Greater Kansas City met at the Veterans Hospital on January 10 with President Charles Loomis presiding. Business covered included discussion of a contribution to the A.Ph.A. Building Fund, contacts with new members, plans for future meetings, and suggestions for participation in the Hospital Pharmacy Section at the Convention of the Midwest Hospital Association.

The February 14 meeting of the Greater Kansas City Association was held at St. Mary's Hospital. Plans were announced for the March meeting at which time a representative of the American Sterilizer Company was scheduled to discuss "Why the Hospital Pharmacist Should Make Intravenous Solutions."

Western New York Chapter

Members of the Western New York Chapter of the ASHP held the first of their evening meetings on January 18 at the Buffalo Veterans Hospital. The program included a demonstration on cosmetic pharmacy by Mr. Melvin Monteith, Chief Pharmacist at the VA Hospital, and a discussion on suspending agents by Mr. John Hintz, also of the VA Hospital. During a tour of the Pharmacy Department, Mr. John Pazdurka demonstrated a colloid mill.

Plans were made for future meetings and there was discussion regarding the possibility of joint meetings with the Rochester Area Society of Hospital Pharmacists.

"Radioisotopes in Medicine," was the subject presented at the February 8 luncheon meeting of the Western New York Chapter. The speaker was Dr. N. C. Bender who is associated with the Roswell Park Clinic.

Illinois Chapter

Dr. George Archambault, Immediate Past President of the ASHP, was the principal speaker at the January 10 meeting of the Illinois Chapter. With approximately 100 hospital pharmacists attending, there was considerable interest in the subject, "The Law of Hospital Pharmacy."

According to recent reports, the Illinois Chapter of the ASHP is having one of its most successful years under the able leadership of Dr. Dwight L. Deardorff, President. The Chapter has initiated two types of meetings—namely, a general type meeting and a workshop or discussion-type meeting, the two being alternated monthly. The general-type meeting is usually held at a centrally-located hotel in Chicago, is sponsored, and medical representatives and friends are invited. Such a program is headed by a well-known speaker or panel. In the workshop or discussion-type meetings, the members meet at the various hospitals in the Chicago Area. In these meetings the official business of the Society is transacted and specific hospital pharmacy problems are discussed. Such meetings are restricted to hospital pharmacists.

Oklahoma Society

The January 19 meeting of the Oklahoma Society of Hospital Pharmacists was held in the Medical Library of the St. Anthony Hospital in Oklahoma City. The principal speaker was Dr. William H. Reiff who discussed "The Use of Isotopes."

Plans were outlined for future meetings and it was agreed to invite Mr. Paul Parker, President of the ASHP, to a meeting of the Oklahoma Society.

Dr. Irwin Hamburger, Resident of Anesthesiology at the St. Anthony Hospital in Oklahoma City, was the principal speaker at the February 16 meeting of the Oklahoma Society. Dr. Hamburger presented a short historical background on barbiturate anesthetics prior to showing a film entitled "Intravenous Anesthesia with Barbiturates."

The meeting was also held at St. Anthony Hospital with Sister Mary Teresa presiding.

Northeastern New York Society

Members of the Northeastern New York Society of Hospital Pharmacists were guests of E. R. Squibb and Sons at a dinner meeting at the Hotel Wellington in Albany, on February 2. Following greetings from the Squibb representatives, two films—"The Management of Obesity," and "Prescription for Life"—were shown.

Greater New York Chapter

The January 17 meeting of the Greater New York Chapter of the ASHP was held at Saint Clare's Hospital in New York City. Mr. Darrell Gifford from the American Sterilizer Company spoke on the manufacture of parenteral solutions by hospital pharmacists. The program proved interesting and stimulating. A discussion followed on the feasibility of undertaking such a program and, if initiated, what the scope of activity should entail and how much of a pre-planned system should be adopted.

Sister Mary Jeanette presided over a brief business meeting which followed. The special project for this year will be a collection of the working formulas in use in the various hospitals. Sister Donatus made the first contribution by presenting a brochure containing the formulations and procedures for injectables manufactured at Saint Clare's Hospital.

Mid-west Sisters' Association

The regular meeting of the Midwest Association of Sister Pharmacists was held at St. Bernard's Hospital in Chicago on February 16. At 1 P.M. there was a tour of the Pharmacy, followed by the meeting at 1:30 P.M.

Sister M. Antoniana gave a report on "Poisoning in Geriatrics." Sister Mary Cherubim gave a report on the Poison Survey being carried out by the Midwest Association, stating that details will be published in the *Adjuvant*.

Western Pennsylvania Society

Dr. Lee G. Sewall, Manager of the Veterans Administration Hospital, Leech Farm, Pittsburgh, addressed the members of the Western Pennsylvania Society at the January meeting. In his discussion on "Current Trends in the Therapeutic Treatment of Psychiatric Patients," he stressed the fact that the use of the new tranquilizing agents—Reserpine and Chlorpromazine—is introducing a new trend in the treatment and rehabilitation of psychiatric patients.

New officers of the Western Pennsylvania Society to serve during 1956 are President Italo Bianculli, Veterans Administration Hospital, Leech Farm, Pittsburgh; Vice-President James Sandala, Western Pennsylvania Hospital, Pittsburgh; Secretary Anne Keane, Mercy Hospital Pittsburgh; and Treasurer Kathleen Hvozdovich, St. Clare Memorial Hospital, Pittsburgh.

Houston Area Society

The January meeting of the Houston Area Society of Hospital Pharmacists was called to order by President Walter Pfluger at Memorial Hospital on Sunday, January 29. The guest speaker, Dr. Joseph Lattimore, discussed "Drugs Used in Surgical Emergencies."

New officers were announced including President Paul Wilburn, Vice-President Ruth Kroeger, and Secretary-Treasurer Dorothea Siler. Announcements were made regarding plans for Open House in Houston following the Austin Institute in June.

Texas Society

The Annual Meeting of the Texas Society of Hospital Pharmacists was held in conjunction with the Eighth Annual Hospital Pharmacy Seminar at the University of Texas, in Austin on February 10 and 12. For the third successive year the officers of the Society were installed by the President of the ASHP, with Mr. Claude Busick present for the 1956 meeting. He installed Mr. Paul Hudson, VA Hospital, Houston, as President; Mr. Edwin C. Hibbs, Harris Hospital, Fort Worth, as Vice-President; and Miss Louise Pope, University Hosital, Little Rock, Ark., Secretary. Mr. Fred Borth, Seton Hospital Austin, will serve as the new Chairman of the Committee on Program and Public Relations, and Miss Adela Schneider, Southern Pacific Hospital, Houston, heads the Committee on Membership. A newly formed Past Presidents' Committee is headed by Mr. Charles Henry, Baylor Hospital Dallas.

During the meeting, Mr. Gammon Jarrell, a former hospital administrator, gave the group hints as to how to get their administrators to send them to meetings. Mr. Claude Busick and Mr. James D. McKinley, Jr., members of the ASHP Executive Committee, spoke briefly on activities of the national organization. Mrs. Evlyn Gray Scott, Chief Pharmacist, St. Luke's Hospital, Cleveland, was also present.

New Jersey Society

New officers of the New Jersey Society were installed at the January 26 meeting held at Passaic General Hospital in Passaic. These include Mr. Morris Goldman, President; Mr. Alexander Chabora, Vice-President; Sister Marian, Secretary; and Mr. Henry Roche, Treasurer.

The principal speaker was Mr. George Mitterman of Eli Lilly and Company. He discussed drugs used to treat diseases of the heart.

On February 16 members of the New Jersey Society met at the Bergen Wholesale Drug Company in Hackensack. An interesting tour of the warehouse followed a presentation on the efficient and labor saving I.B.M. machines.

North Carolina Society

Mr. R. Zack Thomas, Administrator of Charlotte Memorial Hospital was the principal speaker at the dinner meeting of the North Carolina Society held in Charlotte on January 28. The dinner was sponsored by Pfizer Laboratories.

New officers installed at the January meeting included President Andrew J. Darling, Memorial Mission Hospital, Asheville; Vice-President Claude U. Paoloni, Cone Memorial Hospital, Greensboro; Secretary Oscar J. Rodgers, Rowan Memorial Hospital, Salisbury; and Treasurer Gilbert D. Colina, Mercy Hospital Charlotte.

Rochester Area Society

"Polio Vaccine Manufacture," was the subject of a talk and a film at the January 9 meeting of the

Rochester Area Society of Hospital Pharmacists. Sponsored by Eli Lilly and Company, the talk was presented by Mr. Ralph Ernsberger who is in charge of pilot plant operations at the Indianapolis Plant. The meeting was held at the Rochester General Hospital in Rochester.

Current projects of the Society include preparation of a history of the Rochester group and arrangements for the student visits to hospitals during the first week in April. Also, plans are underway for a complete seminar on sterilization problems.

Utah Society

At the January 13 meeting of the Utah Society of Hospital Pharmacists, Mr. Jack B. Heinz, President of the A.Ph.A. spoke. He commented on the splendid work done by hospital pharmacists who are contributing greatly toward keeping pharmacy on a high professional level.

Discussion at the meeting centered around several long range projects—re-education of the public concerning the true value of drugs and proper dispensing; uniform pricing schedules; and incompatibilities of injectable drugs. Upon the recommendation of Mrs. Nellie Vanderlinden, President of the Society, the group agreed to begin work on an extensive list of injectables and their incompatibilities. It was felt that this constitutes one of the major problems in administering injectable medications in hospitals.

The meeting was held at Moreau Hall, Holy Cross Hospital, Salt Lake City.

Northern California Society

The first 1956 meeting of the Northern California Society of Hospital Pharmacists was held on January 10 at the Kuo Wah Restaurant in San Francisco's Chinatown. Following the dinner, the meeting was called to order by President Al Seubert who spoke on the highlights of the organization during 1955. Mrs. Marie Kuck presented the Annual Report of the Secretary and Mr. Claude Busick spoke briefly on activities of the national organization.

Dean Troy Daniels expressed the thanks of the School of Pharmacy in making the Julian Wells Fund possible and said that the fund would be used to show modern trends in conjunction with the dispensing laboratory.

President Seubert praised the Executive Committee for its excellent attendance and support during 1955. He termed the California State Board of Pharmacy Directive as a stimulating and controversial development of 1955 and commended the work of the Liaison Committee with the State Narcotic Board. He also recommended that the N.C.S.H.P. form a closer association with the Association of Western Hospitals and urged all members to affiliate with the American Pharmaceutical Association.

Southern California Society

One hundred members and guests were present for the January 19 meeting of the Southern California Society of Hospital Pharmacists held at the Rodger Young Auditorium in Los Angeles. The meeting was called to order by the retiring president Mr. Joseph Ball who introduced Mr. George Baird, Secretary of the Southern California Pharmaceutical Association. Mr. Baird installed the new officers of the Southern California Society, including Miss Emily Alekna, President, Miss Kikuyo Munemori, Vice-President, Miss Mary Grant, Secretary, and Miss Marie Tilley, Treasurer.

The speaker for the evening was Judge Leroy Dawson, Judge of the Superior Court of Los Angeles.

The February 8 meeting of the Southern California Society was held at St. John's Hospital in Santa Monica. Members were greeted by Mr. Chester Harding, Chief Pharmacist and Sister Mary David, Administrator.

Following several reports and the business meeting, the Program Chairman, Mr Jack Heard called on Mrs. Edith Loustalet who gave a short talk on "Inpatient Order Forms," in which she showed and explained the method used for making inpatient charges in her hospital. Included also on the program was a talk on "Behavior and Neurons," by Dr. Richard D. Walter, Head of the E K.G. Department of the University of California Hospital, Los Angeles.

Wisconsin Society

The Wisconsin Society of Hospital Pharmacists in cooperation with Chas. Pfizer and Company, sponsored a one-day seminar in Milwaukee on February 24. The program included the following papers:

"Hospital Pharmacy in Historical Perspective," by Dr. Alex Berman, University of Wisconsin School of Pharmacy.

"Handling of Radioactive Isotopes in the Pharmacy," by Larry Summers and Peter Solyom, Pharmacy Department, University of Chicago Clinics.

"Standardizing Drug Usage," by Daniel Moravec, Lincoln General Hospital, Lincoln, Nebr.

"New Narcotic Regulations and How They Pertain to Hospital Pharmacy," by Sylvester H. Dretzka Wisconsin State Board of Pharmacy

"Federal and State Narcotic Laws," by Wilbert Penberthey, Narcotic Agent, State of Indiana.

Maryland Association

Members of the Maryland Association of Hospital Pharmacists met at the Washington County Hospital in Hagerstown on February 3. Mrs. Elizabeth Briodi, Chief Pharmacist acted as hostess. The principal speaker was Dr. George F. Archambault who discussed "The Law of Hospital Pharmacy."

Akron Area Society

Twenty-one members and three guests were present for the January 17 meeting of the Akron Area Society held at the Salem City Hospital Salem, Ohio. Highlighting the meeting was a round table discussion covering hospital pharmacy planning. Participants included Mrs. Irene Knepp, Mrs. Elnorah Drury and Mr. Gene Hovis.

Philadelphia Association

The Philadelphia Hospital Pharmacists met at Misericordia Hospital on January 24 with 55 members present. The meeting was presided over by Mr. Basil Ketcham who introduced the Panel for the Problem Clinic. Participants included Mr. Albert Miceli, Cooper Hospital, Camden, *Chairman*, Mr. Thomas Manzelli, Lankenau Hospital, Philadelphia; Mr. Robert Cathcart, The Delaware Hospital, Wilmington; and Mr. Thomas Hynes, Bryn Mawr Hospital, Bryn Mawr. Questions considered included the following: Does the Hospital Formulary have a useful purpose in both small and large hospitals? What is the average scale of wages usually paid to an Assistant or Chief Pharmacist to start? How many hours constitute a working week? Who should be permitted to enter the Pharmacy? Should small hospitals maintain a floor stock of such items as B_{12}, thiamine, ascorbic acid, other injectables, etc.? How should Blue Cross payments be handled?

as the president sees it

CLAUDE BUSICK
St. Joseph's Hospital, Stockton, California

This is the last time I will greet you through this column. The year has gone by all too quickly. It leaves me with mixed emotions of satisfaction and disappointment. There was pleasure and inspiration in meeting so many of you—disappointment that I couldn't visit many of the chapters.

ACCOMPLISHMENTS

It is a satisfaction that the Committee on Pharmacy and Pharmaceuticals will publish the first American Hospital Formulary in the fall.

A Committee on Research and Investigation will formulate the policy for accepting Gifts and Grants to the SOCIETY.

James McKinley and his large Committee will share with me the satisfaction of a job well done with the large increase in membership this year. The organization will benefit with new ideas as well as revenue from this membership. The members will have the advantage of THE BULLETIN of the ASHP and the *Journals of the A.Ph.A.* and from headquarters an inexhaustible source of information, reprints, references and analytical facilities.

Stanley Marincik and his Committee are to be congratulated on the exhaustive study of group insurance. It was disappointing that no company could underwrite the plan we desired. However, further study is being given other phases of insurance.

It is a keen disappointment that nothing concrete was forthcoming this year to help the part time and "budding" hospital pharmacists in small hospitals. Hospital pharmacy has grown rapidly. Its value is recognized in larger hospitals and teaching institutions where every facet of hospital service is available to the patient.

We, in the SOCIETY have developed a very powerful instrument in the Minimum Standard as a guide for all hospital pharmacists. Let's not perfect it and lay it on the shelf. Have we made its value available to the administrators of small hospitals?

No one, unless he has worked in a small hospital, knows better than I the crying need for a basic guide in handling drugs in a small hospital. I am not giving up on this project and will do everything possible to help the pharmacists, the hospital supervisor or administrator and most important the drug service to the patient. Supervisors and administrators in small hospitals need a simple guide for pricing drug service to patients. The part time pharmacists need help in buying, stocking and dispensing drugs to these patients. They should not be criticized because they are not qualified—rather they should be helped and inspired to raise the standard of hospital pharmacy. In many cases hospitals feel they cannot pay the salary of a qualified hospital pharmacist. The patients should at least be given the opportunity of having drugs dispensed by a trained pharmacist.

ACKNOWLEDGEMENTS

I would like to take this last opportunity to publicly thank all of you who have so graciously helped me.

To the officers elected to serve with me, Vice President Milton Skolaut, and Treasurer Sister Mary Rebecca, my sincere thanks for your help. To Gloria Niemeyer, a very special thank you. Without your wonderful help the office of the President could have been a burden. To Don Francke and Dr. R. P. Fischelis my thanks for your advice. To my mentor, Dr. George Archambault, my very grateful thanks. To Leo Godley, Program Chairman, and James McKinley, Membership Chairman my sincere appreciation of the outstanding jobs you have done. The Executive Committee, committee chairmen, committee members and local chapter officers have all worked hard. I want you to know that your efforts are most sincerely appreciated. It is impossible to list in the BULLETIN all of you who have helped me so very much this year. I do wish I could give you this recognition. I won't forget your kindness and to you all, thank you.

C. L. Busick

NEWS

National Hospital Week

Hospital pharmacists are again urged to participate in National Hospital Week which will be observed this year from May 6 to 12. Following the theme, "Your Hospital . . . For You and Your Community," emphasis will be on planning for community needs. Pharmacists will have an opportunity to depict the role of their profession in the community.

The American Pharmaceutical Association will again offer a plaque as an award for the best pharmacy display in a hospital arranged by hospital pharmacists. To be eligible for this award, hospital pharmacists must be members of the American Pharmaceutical Association and the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS. Further details will be included in a letter to be sent to all hospital pharmacists who are members of the A.Ph.A. and the ASHP.

Displays entered into the competition for this plaque must have the approval of the administrator of the hospital where they are made, and they must not incorporate private advertising material. The plaque is presented in the name of the hospital.

Two 8 by 10-inch glossy photos of entries are to be sent to the Secretary of the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS, 2215 Constitution Avenue, N. W., Washington 7, D. C., not later than June 1 for judging. A.Ph.A.'s Public Relations Committee will select the winner.

A plaque honoring the 1955 winner in the display competition will be presented at the ASHP Annual Meeting to be held in conjunction with the Convention of the American Pharmaceutical Association in Detroit, Michigan, during the week of April 8. The award will be presented to Sister Mary Jeanette, Chief Pharmacist at Mary Immaculate Hospital in Jamaica, New York.

Graduate Program at Temple University

Temple University School of Pharmacy, Philadelphia, Pa., has announced a program of graduate study in hospital pharmacy to be conducted in collaboration with the Temple University Hospital. A limited number of internships, to be served in the Pharmacy of the new Medical Center, are available. Applicants must be graduates of an accredited College of Pharmacy and must be accepted by the Committee on Graduate Study. For information and application write to: Office of the Dean, Temple University School of Pharmacy, 3223 North Broad St., Philadelphia 40, Pa.

Archambault Appointed to NPC Advisory Committee

George F. Archambault, Chief, Pharmacy Branch, Division of Hospitals, U. S. Public Health Service, has been appointed to the National Pharmaceutical Council's Advisory Committee. He will represent both hospital and government pharmacy.

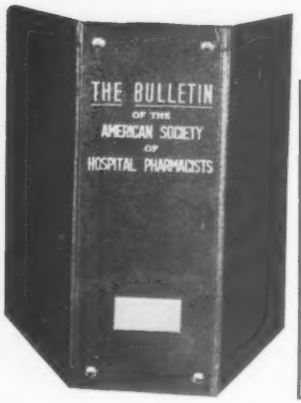
The National Pharmaceutical Council has the responsibility for developing an industry-pharmacy public relations program. Members on the Advisory Council represent the various areas of the pharmaceutical profession.

A.Ph.A. Announces 1955 National Pharmacy Week Awards

Sister Mary Oswalda, St. Joseph's Children's and Maternity Hospital, Scranton, Pennsylvania, has been named recipient of an award for the best display installed in a hospital during the 1955 National Pharmacy Week. The second prize in the hospital competition was awarded to Miss Cynthia Wu, St. Luke's Hospital, Cleveland, Ohio, and the third prize to Mr. Frank F. Stencil, Montefiore Hospital, Pittsburgh, Pa. Presentation of the awards will be made at the Convention of the American Pharmaceutical Association at Detroit, Mich. during the week of April 8.

Winner in hospital competition—1955 National Pharmacy Week

PERMANENT BINDER
FOR
The BULLETIN
of the
A.S.H.P.



$3.00 POSTPAID

4 or more $2.50 each

Purchase price refunded if not completely satisfied.

This new custom made binder is now large enough to contain the Decennial issue in addition to the new larger editions of THE BULLETIN. It is made of heavy ¼ inch cardboard, covered with waterproofed red leather reproduction, with the name die stamped in gold on the side with a special marking block provided to date the editions in the binder. It is manufactured to hold all the editions of THE BULLETIN issued during a two year period (12 issues). This binder has the approval of the publications committee of the A.S.H.P.

P. O. BOX 5544
BINDER-A.S.H.P.
FRIENDSHIP STATION
WASHINGTON 16, D.C.

I enclose $_____ for ____ binder(s) which you will send postpaid.

NAME_____

STREET_____

CITY_____ ZONE____

STATE_____

VA Residency Program

Veterans Administration and cooperating universities are offering pharmacists an opportunity to take graduate work towards advanced degrees in pharmacy as VA pharmacy residents. Applications are being received for positions of pharmacy resident in Los Angeles, California, Buffalo, New York, and Iowa City, Iowa. Plans are also being made to include residents in one or two hospitals in the Midwest.

Applications should be filed with VA before May 1, 1956 in order to be considered for training beginning with the 1956 fall semester. Appointments will be made from eligible applicants who qualify for admission to the graduate schools of the University of Southern California, University of Buffalo, University of Iowa, or other universities cooperating in the training program.

Two years are required to complete the residency, which is a combination of graduate school study and practical experience in a VA hospital. About half-time will be spent on duty in VA hospitals, and the remainder in graduate work at the university participating in the program.

A degree of Master of Science in Pharmacy with a major in Hospital Pharmacy will be awarded by the university upon satisfactory completion of work.

Residents are selected by Civil Service examination of the applicants' qualifications. Announcements of the examination (Pharmacy Resident) are available at any Post Office. This is an amendment to Announcement No. 438 (B), for pharmacists.

Pharmacists interested in applying should file a Form 57 (application form) with the Executive Secretary, Central Board of U. S. Civil Service Examiners, Veterans Administration, Washington 25, D. C., before the May 1 deadline.

Applicants must have a B.S. degree and must be currently registered as pharmacists. Undergraduates may apply before their graduation from school, but must submit proof of graduation and registration before they can be appointed.

Pharmacists accepted for the residency program will receive $2.18 an hour while working at a VA Center or hospital for 28 hours a week during the course. Quarters and subsistence will be available at the hospitals at a nominal charge. Residents must pay tuition and other academic charges at the university.

Lt. Briner Speaks to Fraternity Group

Lt. William Briner, a pharmacist at the Clinical Center, National Institutes of Health, and vice president of the Maryland Society of Hospital Pharmacists, was the principal speaker at the Founders' Day Celebration of Phi Delta Chi held at Temple University School of Pharmacy, November 14, 1955. He spoke briefly about the importance of the professional phase of fraternalism, stressing the necessity for maintaining a proper balance between the professional and social phases of fraternity life. He further discussed the role of the hospital pharmacist and current trends in the field.

Lt. Briner is a graduate of Temple University School of Pharmacy and a past president of Alpha Omicron Chapter of Phi Delta Chi.

New Blue Book Published

The new 1956-1957 *American Druggist Blue Book* listing a total of 171,910 products has recently been published. In response to pharmacists' requests, the *Blue Book* again lists five symbols indicating fair trade minimum, prescription only products, narcotics, exempt narcotics, and products which need to be refrigerated.

The 1956-1957 *Blue Book* also includes a refresher course covering professional subjects, merchandising, store equipment, and animal-poultry health. In addition, over 7,200 manufacturers are included in an alphabetical index at the back of the book.

The *Blue Book* is available for $8.00 from American Druggist Blue Book, 250 West 55th Street, New York 19, N. Y.

Standards for Hospital Accreditation

Hospital pharmacists will be interested in noting that the "Pharmacy or Drug Room," is included as one of *Essential* Services which must be maintained according to standards for hospital accreditation recently issued by the Joint Commission on Accreditation of Hospitals.

The section entitled "Pharmacy or Drug Room," reads as follows:

a. There shall be a pharmacy directed by a registered pharmacist or drug room under competent supervision.

b. Facilities shall be provided for the storage, safeguarding, preparation, and dispensing of drugs.

c. Personnel competent in their respective duties shall be provided in keeping with the size and activity of the department.

d. Records shall be kept of the transactions of pharmacy, and correlated with other hospital records where indicated. Such special records shall be kept as are required by law.

e. Drugs dispensed shall meet the standards established by the United States Pharmacopeia, National Formulary, New and Nonofficial Remedies, British Pharmacopoeia, or Canadian Formulary.

f. There should be an automatic stop order on dangerous drugs.

fresh mixed

FOLBESYN*

VITAMINS LEDERLE

B+C

COMPLEX

assures full potency

Separate packaging of dry vitamins and diluent (mixed immediately before injection) assures the patient a more effective dose. May also be added to standard IV solutions.

Dosage: 2 cc. daily.

Each 2 cc. dose contains:

Thiamine HCl (B_1)	10 mg.
Riboflavin (B_2)	10 mg.
Niacinamide	50 mg.
Pyridoxine HCl (B_6)	5 mg.
Sodium Pantothenate	10 mg.
Ascorbic Acid (C)	300 mg.
Vitamin B_{12}	15 mcgm.
Folic Acid	3 mg.

For economy, FOLBESYN is available in special 25-dose hospital packages. Also offered in tablet form. Ask the Lederle Representative for details.

LEDERLE LABORATORIES DIVISION

AMERICAN Cyanamid COMPANY

PEARL RIVER, NEW YORK

Lederle

*REG. U.S. PAT. OFF.

In our hospital disinfection procedures are dependable —yet simple

One germicide-disinfectant is standard throughout the hospital from operating room to routine housekeeping.

Bactericidal, fungicidal, and tuberculocidal, Amphyl® is effective, even in contact with organic matter such as blood, pus or mucus, i.e., under actual conditions of use.

Surfaces (floors, walls, furniture) disinfected by only a ½% Amphyl solution retain their germicidal potential for as long as a week.

Amphyl's action is dependable for disinfection of:

Thermometers—oral and rectal
Instruments—surgical or diagnostic
Syringes and tubing
Laboratory glassware
Dishes and utensils
Washroom facilities
Linens and blankets
Floors, walls, furniture

And particularly for any type of tuberculo-disinfection

Amphyl is:

Highly concentrated (phenol coefficient 10)
Economical
Odorless
Non-irritating
Non-corrosive
Non-staining
STABLE—even in dilution

Available through your hospital and surgical supply dealer

Send for samples and simple procedure data

Lehn & Fink PRODUCTS CORPORATION *Professional* DIVISION

Dept. 19, 445 Park Avenue, New York 22, New York

® Brand of alkyl and aryl phenolic germicide

Forum for Hospital Administrators

The Mississippi Society of Hospital Pharmacists has announced plans for a Hospital Pharmacy Forum for Hospital Administrators to be held at Hotel Edwards in Jackson on Wednesday, May 2. It is anticipated that pharmacists and administrators as well as retail pharmacists concerned with pharmacy practice in hospitals will participate. The president of the Mississippi Society, Mr. Lee L. Cameron, will preside during the morning session and the vice-president, Mr. Max Taylor, will be in charge of the afternoon meeting. Sister Mary Carl Marty, Secretary of the Mississippi Society, has been active in making arrangements.

Following registration, a welcome on behalf of the members of the Mississippi Society and the invocation, the following program is scheduled.

"Short History of Hospital Pharmacy Development," by E. L. Hammond, Dean, School of Pharmacy, University of Mississippi.

"What is Hospital Pharmacy?" by Grover C. Bowles, Chief Pharmacist, Baptist Memorial Hospital, Memphis, Tennessee.

"The Role of the Pharmacist in the Small Hospital," by Grover C. Bowles.

"Minimum Standards for Pharmacies in Hospitals," by Grover C. Bowles.

Panel Discussion: *Participants*—E. L. Hammond, Grover C. Bowles, Max Taylor, and Sister Mary Carl.

"The Economy of a Hospital Pharmacy"

—From an Administrator's Viewpoint, by Dabney Gilliland, Administrator, Greenville General Hospital, Greenville, Mississippi.

—From a Business Manager's Viewpoint, by John Gill, Business Manager, The Street Clinic and Mercy Hospital, Vicksburg, Mississippi.

—From a Pharmacist's Viewpoint, by Charles Everett, Chief Pharmacist, Mississippi Baptist Hospital, Jackson, Mississippi.

"Instrumenting Hospital Pharmacy in Small Hospitals," by Grover C. Bowles.

"Accreditation in the Future," by Grover C. Bowles.

Panel Discussion: Participants—Grover C. Bowles, Dabney Gilliland, John Gill, and Charles Everett.

Steele Appointed to A.C.S. Committee

Frank J. Steele, Chief Pharmacist and Instructor in Pharmacology, Greenwich Hospital, Greenwich, Conn., has been appointed a member of the Education Committee of the Western Connecticut Section of the American Chemical Society. Mr. Steele has been active in the ASHP and has served on several national committees.

The following are additional abstracts of papers presented at the Pharmacy Section of the 1955 Convention of the American Association for the Advancement of Science. Abstracts of other papers appeared in the January-February issue of THE BULLETIN.

The Utilization of Pharmacists in the Smaller Hospitals, by R. C. Williams, M.D., Georgia Department of Public Health, Atlanta, Ga.

The hospital today is rapidly assuming the role of the health center of the community. Present day medical care is in reality a combination of preventive and curative medicine. To attain success in such a program requires coordination of efforts by all members of the health team working together through integrated planning. The professional pharmacist is an important member of this team.

Slightly less than 80 percent of the hospitals in the United States have 50 beds or less. There are more personal contacts between employees in the smaller hospitals because they constitute a lesser number and because of their increased proximity resulting from a smaller physical plant. Relationships in smaller hospitals are further intensified by the variety of personnel, both professional and nonprofessional, needed to staff the various areas of the hospital. This in turn magnifies inter-area problems within the hospital because of the close contact of hospital employees.

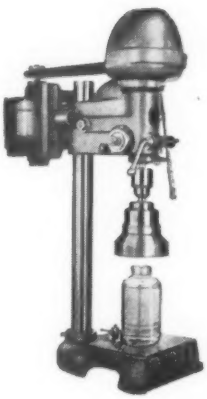
In the smaller hospitals (less than 100 beds), the full-time services of a pharmacist are not generally utilized. It is essential that sound plans be developed to provide adequate pharmaceutical service through local pharmacists for the smaller hospitals. Hospitals served on a part-time basis by local pharmacists must insure that a sufficient amount of time is devoted to the hospital to adequately meet the needs. Duties and responsibilities for the part-time hospital pharmacists include: (1) Procedures and policies for the purchasing, storing, labeling and distribution of all drugs; (2) Periodic inspection of drug stocks in the storeroom and in all nursing service areas; and (3) Development and improvement of close relations with all professional groups of the hospital in order to provide and improve needed pharmacy service.

Advantages of the Master of Science in Hospital Pharmacy Program at the Medical College of Virginia, by John W. Boenigk, Medical College of Virginia, Richmond, Va., and Russell H. Fiske, Medical College of Virginia Hospital, Richmond, Va.

At the present time there is a shortage of hospital pharmacists in the United States. In an effort to meet this shortage 17 schools of pharmacy

VIALSEAL MODEL CMD . . . economy - utility

CRIMP SEALER



Wherever pharmaceutical, veterinary or hospital vials and bottles are processed, the Model CMD does an excellent aluminum crimp sealing job. Containers, small and large, up to 1 liter capacity, can be securely sealed at a rate of 1800 hourly. Aluminum seals - 11 mm, 13mm, 20mm, 30mm, 43mm are all handled with equal facility. A sturdy, widely used stand and motor drive combined with a positive sealing, high speed chuck insure dependable service.

PerfeKlum

EST. 1922

POPPER & SONS, INC.

300 FOURTH AVENUE NEW YORK 10, N. Y.

provide graduate instruction in hospital pharmacy. Common to most of their programs is the subject: hospital pharmacy administration. The amount of time devoted to this subject varies but usually 2 or 3 semester credit hours of work is offered.

The staff of the Medical College of Virginia, School of Pharmacy, believe that a graduate program containing a larger number of hospital administration courses would have several advantages. One, the graduate would have an adequate background in administration courses which would benefit him in his capacity as a chief pharmacist, since many of his duties are administrative in nature. Second, combined training in hospital pharmacy and hospital administration would qualify the graduate to act as both chief pharmacist and assistant administrator in a small hospital.

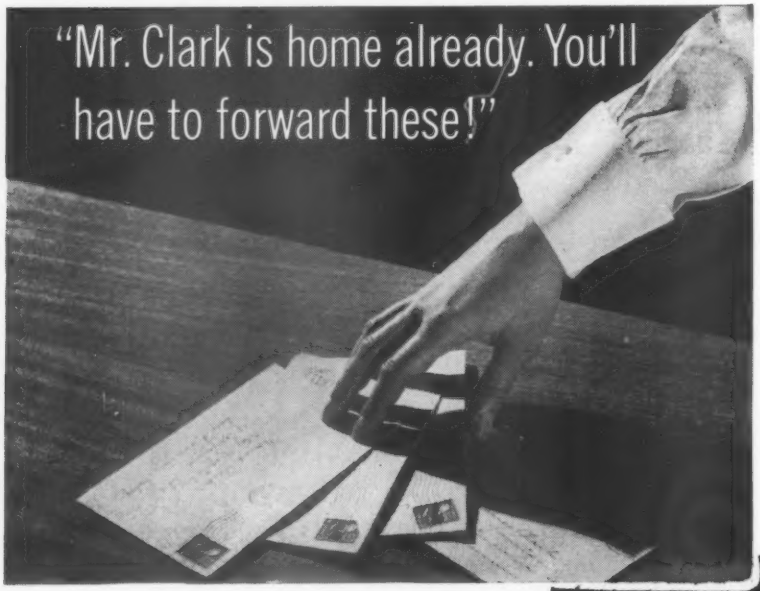
There are a large number of hospitals of 50 to 100 bed capacity which do not have pharmaceutical service provided by a pharmacist. Frequently, such hospitals do not require the full-time service of a pharmacist. However, it is difficult to obtain the part-time service of a pharmacist. We believe that a person with sufficient training in hospital administration and hospital pharmacy would be ideally suited for a combination position of chief pharmacist and assistant administrator. The hospital and patient would benefit from the pharmaceutical service provided and the administrative assistance would be of value to the administrator. The student would benefit by having greater employment opportunities and greater possibilities for development.

The Potentizing Effects of Parabens as Antimolding Agents in Syrups, by B. Frank Ellzey and Oliver M. Littlejohn, Southern College of Pharmacy, Atlanta, Ga.

The purpose of the investigation was to study the effect of the potentizing action of parabens using sixteen-ounce samples of syrups.

Earlier storage tests showed that for preservation of Simple Syrup, U. S. P., in two-ounce sample lots, a mixture of 50 percent butyl paraben and 50 percent methyl paraben at 1:4500 was the best for inhibition of microorganisms. In earlier tests using diluted simple syrup (42.5 percent sucrose w/v) the use of either butyl paraben 65 percent and propyl paraben 35 percent at 1:7500, or butyl paraben 90 percent and propyl paraben 10 percent at 1:8000 was effective.

Storage tests using sixteen-ounce samples showed that for Simple Syrup, U. S. P., the mixture of 50 percent butyl paraben and 50 percent methyl paraben at 1:4500 was best for inhibition of microorganisms. In diluted simple syrup (42.5 percent sucrose w/v) the use of either butyl paraben 65 percent and propyl paraben 35 percent at 1:7000, or butyl paraben 90 percent and propyl paraben 10 percent at 1:7000 was effective.



HERE'S HOW
POLYSAL®
The Balanced Electrolyte Solution, Helps Patient Recovery

1
POLYSAL prevents and corrects hypopotassemia without danger of toxicity.

2
POLYSAL corrects moderate acidosis without inducing alkalosis.

3
POLYSAL replaces the electrolytes in extracellular fluid.

4
POLYSAL induces copious excretion of urine and salt.

Polysal, a *single* I. V. solution to build electrolyte balance, is recommended for electrolyte and fluid replacement in all medical, surgical and pediatric patients where saline or other electrolyte solutions would ordinarily be given. Available in distilled water—250 cc. and 1000 cc. and in 5% Dextrose—500 cc. and 1000 cc.

STOCK
POLYSAL
CUTTER Cutter Laboratories

CONTINUED FROM PAGE 136

The fourth and final session of the Eighth Annual Seminar for hospital pharmacists was opened by a discussion of the "Preparation of Sterile Ophthalmic Medication," given by Mrs. Evlyn Gray Scott, Director of Pharmacy Service, St. Luke's Hospital in Cleveland, Ohio. She discussed suitable containers, filters, preservatives, etc. and had brought some samples of what is used in St. Luke's Pharmacy along with her.

James D. McKinley, Jr., Chief Pharmacist, M.D. Anderson Hospital, Houston, presented his paper on "A Procedure for Detecting the Dilution of Meperidine Hydrochloride in Multiple Dose Vials." Mr. McKinley had formerly presented this paper at the ASHP meeting in Miami last May. He said the paper was based on the need to prevent patients from getting watered down meperidine hydrochloride.

The seminar was closed by Dr. Frederick Lofgren, who spoke to the group on "Bulk Compounding That Can Be Done Effectively in the Hospital Pharmacy." He stated that serious bulk compounding should not be taken up if the hospital has less than 200 beds. The major factor is to determine whether or not it could be done economically. Dr. Lofgren is an Associate Professor of Pharmacy at the University of Texas.

CALENDAR OF MEETINGS

1956

American Pharmaceutical Association — April 8-13, 1956, Detroit, Mich.

American Society of Hospital Pharmacists— April 8-13, 1956, Detroit, Mich.

Southeastern Hospital Conference (including Southeastern Society of Hospital Pharmacists)—April 18-20, 1956, Miami Beach, Fla.

Mid-west Hospital Association—April 25-27, 1956, Kansas City, Mo.

Tri-State Hospital Assembly—April 30-May 3, 1956, Chicago, Ill.

Association of Western Hospitals—April 23-26, 1956, Seattle, Wash.

Catholic Hospital Association—May 21-24, 1956, Milwaukee, Wis.

Institute on Hospital Pharmacy—June 18-22, 1956, Austin, Tex.

Institute on Hospital Pharmacy—August 20-25, 1956, Chicago, Ill.

American Hospital Association—September 17-20, 1956, Chicago.

Now **post-operatively** as well as operatively

Cytal* **for ECONOMY**

Clinical investigation now indicates that post-operatively, Cytal (in diluted form) is the urological irrigant of choice for ECONOMY.

Requires less frequent irrigating post-operatively.

"... Cytal solution was used to irrigate indwelling catheters post-operatively for transurethral resection of the prostate and of bladder tumors. It was found that whereas in using saline one was required to irrigate the catheter, for example every 15 minutes, using the diluted Cytal, one need irrigate the bladder only every hour to an hour and a half or even longer."†

Cytal reduces preparation costs.

Available in a sterile, concentrated liquid form ready to be diluted 9 to 1 with distilled water — no mixing chemicals or resterilizing necessary. However, resterilizing later will not discolor Cytal.

And when used operatively Cytal is more economical, too.

A concentrated solution of hexitols and parabens, Cytal is ready for immediate use when diluted with 9 parts distilled water. Considering the time and expense needed to prepare *other types* of non-hemolytic fluids, you actually cut costs with Cytal.

*T.M. Concentrated Cytal is available in 1 liter Saftiflasks,® sterile and pyrogen-free.

†Schulte, et al., "Clinical Use of Cytal in Urology," Jrnl. of Urology, May 1954.

SINCE CUTTER 1897

CUTTER Laboratories
BERKELEY CALIFORNIA

NEW MEMBERS

MARCH 1, 1956

CALIFORNIA

Behrns, William G., 13639 Bassett Ave., Van Nuys
Caldeira, Allen, 233 Katherine Ave., Salinas
Fischer, Walter C., Resident Pharmacist, G.M. & S. Hospital, V.A. Center, Los Angeles
Nasatir, Julius, 613 E. Mariposa, Santa Maria

FLORIDA

Meyer, Mardis, 1748 S. W. 20th St., Ft. Lauderdale
Nelms, Shirley Lee, 820 Riverside Ave., Jacksonville

GEORGIA

Stevenson, Mary C., 142 N. Reed St., Smyrna

ILLINOIS

Arase, Hiroshi H., 4655 N. Hazel, Chicago
Chan, Joan, 280 N. Clifton Ave., Elgin
Gribbens, Lorraine E., 809 S. Marshfield, Chicago
Miller, J. Keith, 8249 S. Bishop, Chicago
Smith, Lawrence D., 1167 Clarence Ave., Oak Park (A)

INDIANA

Ball, James R., 4823 Montrose, Fort Wayne (A)

KANSAS

Galvin, Robert E., 1233 E. First St., Fort Scott

MARYLAND

Flayhart, Walter F., 512 Fairmount Ave., Baltimore
Hall, George R., 9011 Sonoma Lane, Bethesda
Heneson, Henry, 3021 Chelsea Terr., Baltimore
Moscati, Adrian, 3305 Gibbons Ave., Baltimore

MASSACHUSETTS

Raubenheimer, Herbert C., 197 Walnut St., Newtonville (A)

MINNESOTA

Landherr, Gerald M., Rose Creek
Sister Serena Zilka, 2500 6th St. S., Minneapolis

NEBRASKA

Ehlers, Merrell V., 1720 Sprague St., Omaha

NEW JERSEY

Berson, Jack J., 77 E. Emerson St., Clifton

NEW YORK

Conti, Vincent J., 1553 E. 2nd St., Brooklyn
Continelli, Basil M., 25 Macamley, Buffalo
Herzog, Maurice, 65 Carol Dr., Rochester (A)
Maus, Herman C., Brockway Rd., Frankfort

OHIO

Koroloff, Violet S., 3469 Hughes Dr., Toledo
Pinger, John E., 3710 Market St., Youngstown
Zeidman, Stanley S., 5801 Rhode Island Ave., Cincinnati

OKLAHOMA

Powers, Betty Jean, 416 N. E. 14th, Oklahoma City

OREGON

Robinson, Leslie Ann, 4824 N. E. 39th, Portland (A)

PENNSYLVANIA

Goldstein, Martin S., 2438 S. Mildred St., Philadelphia
Ludwig, Walter J., 332 S. 43rd St., Philadelphia
Zipf, Robert L., 1624 Meadville St., Pittsburgh

TEXAS

Holguin, Hanna S., 1811 21st, Apt. 2, Galveston

UTAH

Rogers, Jean, 1986 Wilson Ave., Salt Lake City

WISCONSIN

Tiegs, George E., 1921 W. Lawn Ave., Madison
Unke, Elmer E., 1268 Woodland Dr., Pewaukee

CANADA

Clarke, B. Elizabeth, 41 Paisley Ave. N., Hamilton, Ont.

The following ASHP members have sponsored the New Members listed on this page. The officers of the SOCIETY *and the Committee on Membership and Organization appreciate the efforts of the individuals who have encouraged New Members to join the national organizations. Sponsors will be listed along with the New Members in each issue of* THE BULLETIN.

Andrus, Elden G.
Arvan, Emma K.
Austin, Harry W.
Bailey, Leon E.
Baker, Norman
Beck, Allen V. R.
Cathcart, J. R.
Crotwell, Johnnie M.
Deardorff, Dwight L.
Desiderio, Joseph A.
Eno, Denise M.
Fehnel, Paul O. Jr.
Flack, Herbert L.
Herskowitz, Clara D.
Heyer, Ursula E.
Inashima, Osamu J.
Jagodzinski, Wanda E.
Jones, James P.
Lantos, Robert
Latiolais, Clifton J.
Martin E. J.
Monyak, Dorothy
Poucher, Jean W.
Pratley, Gus
Rodgers, E. Frances
Schroeder, Marvin K.
Scigliano, John A.
Sister M. Ancilla
Sister M. Gerald
Sister M. Teresa
Sister Regina Marie
Sturner, Frances X.
Teakell, Wanda Lee
Towne, Charles G.
Vanderlinden, Nellie V.
Vicklund, Louise
Wendel, Dwight
Wright, Marion L.

MEMBERSHIP DUES

New Members of the SOCIETY as well as those who are delinquent will want to note the following excerpt taken from the ASHP By-Laws, Chapter V, Article 4:

"The period of membership shall coincide with the period of membership in the American Pharmaceutical Association. Dues are payable and due on the anniversary date of this period. Membership in the SOCIETY and the obligation for dues will continue from year to year unless a member's resignation, signed by the member, is received by the Secretary prior to the end of the year for which dues have been paid.

"Any member in arrears for dues for one year shall cease to be a member of the SOCIETY, provided that at least two weeks before his name is removed from the rolls, the Secretary shall send him a written notice of his delinquency together with a copy of the By-Laws pertaining to the subject. Such a person may be reinstated as a member provided his arrears have been paid and payment of current membership dues is made."